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Education commences at the mother's knee, and every word spoken within the hearing of little children tends towards the formation of character. —*Ballou*

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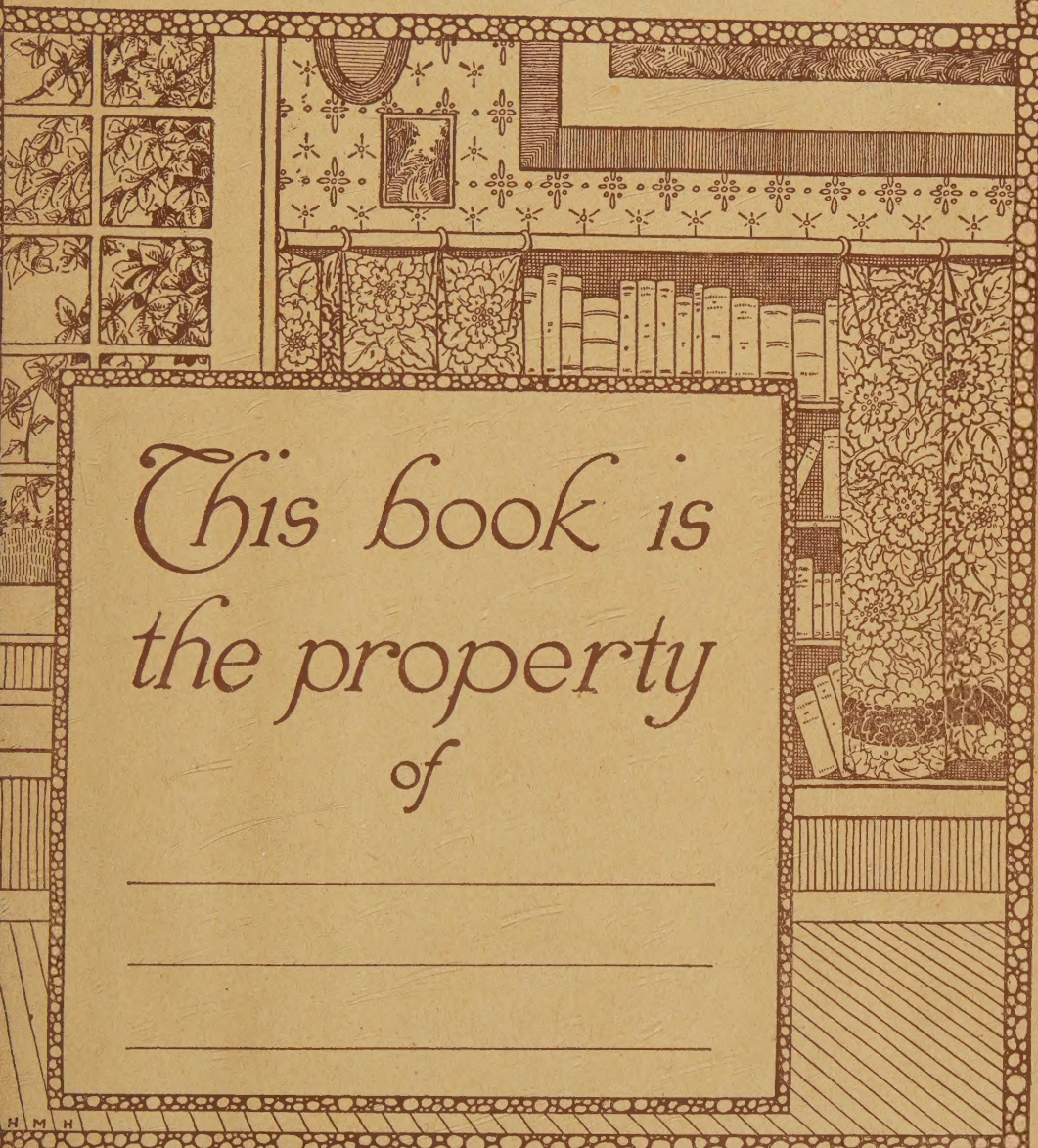

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Knowledge is of two kinds. We know a subject ourselves, or we know where we can find information upon it.

—Samuel Johnson

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THE AMERICAN EDUCATOR

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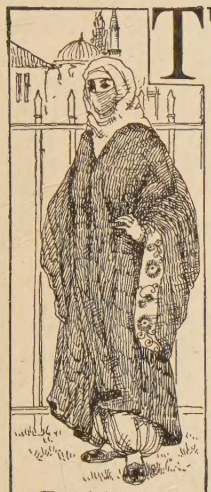

A Turkish Woman

TURKEY, the name of a decadent empire, which went down to defeat with Germany in the World War, and suffered the well-deserved fate of dismemberment. No voices were raised to plead the cause of Turkey when it sent its envoys to the peace conference. Crimes against its subject peoples which no other nation in history has duplicated turned humanity against the dying monarchy, whose history has been a series of adventures in oppression, corruption and misrule.

A Disappearing Empire. The Turkey with which the present generation is familiar was known as the Ottoman Empire, and was so called from Othman, or Osman, its founder, who, about the year 1300, reared an independent kingdom in Asia Minor upon the ruins of the Seljuk Turkish Power. His followers were a tribe that had swarmed out of Central Asia about fifty years before.

The spirit of conquest was strong in these early Ottoman Turks, and gradually they subjugated the Armenian peoples, absorbed the dependencies of the Eastern Roman, or Byzantine Empire, and fought their way into South Central Europe, and Africa. In the sixteenth century, when the power of the Ottoman Turk was at its height, the empire included Arabia and the Asiatic posessions of the fallen Byzantine Empire, including Constantinople; Macedonia, Greece, Albania, Serbia, the provinces that became modern Rumania, Bulgaria, the Greek Mediterranean islands, Syria, Tripoli and Egypt. The Ottomans even gained a foothold in Hungary and in Italy, but in the seventeenth century the tide began to turn against them, and after 1683, when John Sobieski of Poland raised the siege of Vienna, they were gradually pushed out of Europe. One by one the European provinces of Turkey gained their independence and became free nations or were absorbed by other European powers. In 1912 Italy by a successful war wrested Tripoli from Turkey, and at the close of the Balkan Wars, in 1913, the empire was shorn of all its European holdings except Constantinople, Adrianople, a small section adjoining these cities and a few islands in the Mediterranean.

Then came the World War. Even with the losses it had suffered in 1914 the Turkish Empire at that time covered more than 710,000 square miles of territory, exclusive of Egypt, where the sultan still exercised nominal authority.

Changes During the World War. Early in the World War the British annexed the island of Cyprus, and in 1915 declared Egypt a British protectorate. In 1916 the people of Hedjaz, a narrow strip of territory in Arabia, bordering on the Red Sea, revolted and set up an independent kingdom; this state has an area of 96,500 square miles and a population of 300,000. In 1917 Palestine was captured by the British, and by the end of the war all of Syria was under allied control. Mesopotamia fell into British hands in 1917, and when Turkey surrendered in the fall of 1918 the allies gained control of the remainder of the Ottoman domain.

Turkey Dismembered. The only section of the old empire which is dominantly Turkish is the peninsula at the western extremity of Asia, known as Asia Minor, or Anatolia. This territory is between 193,000 and 200,000 square miles in extent, and has a population of about 10,000,000. It is composed of the vilayets (provinces) of Brussa, Smyrna, Konia, Angora, Adana, Sivas, Trebizond and Rastamuni. There are also two small subdivisions, Ismid and Bigha. According to the principle of self-determination of peoples, it was generally agreed by the allies that most of this nucleus of the old empire should remain under Turkish control, but the disposition of the other parts of the domain occasioned much discussion.

The following program may be regarded as typical of the plans proposed: That Turkey in Europe, excepting Constantinople,

be divided between Greece and Bulgaria; that Constantinople be left under the nominal suzerainty of the sultan (in recognition of the religious feelings of the Mohammedans throughout the world), but that it be controlled directly by an international commission; that various sections of Arabia be united into an Arab state under the rule of the king of Hedjaz, whose alliance with the allies foiled the kaiser's plan of starting a holy war of the Mohammedans; that the islands off the west coast of Anatolia be ceded to Greece; that Armenia be an independent state under the guardianship of one of the allies, preferably America; that Palestine be a separate state under British or international protection; that Syria be made a French protectorate, and that Mesopotamia be independent, but under British protection.

Certain sections of Anatolia along the coast were claimed by Greece, Italy and France. The final decision on these points and on the exact boundaries of the various states to be erected had not been reached when the peace treaty with Germany was signed; it seemed probable that many of the points would be settled by the League of Nations when it began functioning.

Turkey and Its People. The discussion which follows is restricted to the genuinely Turkish portion of the old empire, namely, Anatolia, or Asia Minor. (For descriptive matter on the various parts of the former domain, see ARMENIA, ARABIA, PALESTINE, SYRIA, MESOPOTAMIA, EGYPT, etc.) *Anatolia* is derived from Greek words meaning *to rise*, a word chosen with reference to the elevated surface, and is the modern name for Asia Minor. The country includes the

TURKEY OF THE FUTURE

The black area in Asia represents the only territory left under the undisputed sway of the sultan; the black area in Europe may be separated entirely from the realm of Turkey; that question is to be determined by the league of nations. The heavy boundary line marks the limits of the empire in 1914.

peninsula bounded by the Armenian highlands on the east, Syria and the Mediterranean on the south, the Aegaen Sea on the west, and the Black Sea and Sea of Marmora on the north. In the interior the land is a series of plateaus, having an average elevation of 3,000 feet. Near the Mediterranean seacoast these uplands suddenly sink to the narrow belt of level land called the *Levant*. The plateaus are nearly bare of trees and are interspersed with salt plains, marshes and salty lakes. The land is here best adapted for grazing. Under irriga-

tion, however, the soil is productive. The strips of seacoast on the west, north and south are fertile and bear a luxuriant vegetation, including such fruits as prunes, olives and figs. Farming is practiced in the interior with considerable toil, and grains, cotton and tobacco are raised. Silk culture also receives attention.

The plateau is bordered on the north by a series of parallel mountains which run the whole length of the Black Sea. The greatest elevation, in the extreme east, is 12,000 feet. On the south is the Taurus range, following the Mediterranean coast, and having many peaks over 10,000 feet in height. These mountains are rich in minerals, but the mines have as yet been little developed. The mineral deposits of Anatolia include coal, lead, manganese, iron, gold, salt and petroleum, and they offer a promising field for capitalists when normal conditions return.

In Anatolia, as in other parts of the old Turkish domain, industry has long been in a backward state. The rural population which lives chiefly by farming and sheep raising, has suffered from misgovernment, lack of transportation facilities ignorance and extortion of tax officials. Manufacturing in the modern sense is almost unknown, but Turkish artisans show great skill in producing copper and brass utensils, and, especially, hand-woven rugs. Cloth, olive oil and soap are made in limited quantities.

The Turkish peasants are naturally patient, hospitable and kind-hearted; it is the unscrupulous deeds of the ruling classes that have given rise to the feeling in Western nations expressed in the term, the "Unspeakable Turk." The Turkish people are all Mohammedans in religion, and are devoted followers of the Prophet. They are found in all parts of the old empire, both in Europe and Asia, but are nowhere numerically dominant except in Asia Minor. In the cities Greeks, Jews and Armenians are important in commercial life, but Turks have political control. Nomadic Turkomans, who are racially akin to the Turks, are found in the rural districts in large numbers. The chief cities include Smyrna, Scutari, Brussa, Adana, Trebizond and Adalia.

History of the Empire. The Ottoman Turks came originally from the region of the Altai Mountains, in central Asia, and in the sixth century A. D. they pushed onward to the west, in connection with other Turkish tribes. Early in the eighth century they came in contact with the Saracens, from whom they took their religion, and of whom they were at first the slaves and mercenaries. In the thirteenth century they appeared as allies of the Seljukian Turks against the Mongols, and for their aid they received a grant of lands in Asia Minor. Othman or Osman, the son of their leader, Ertogrul, became the most powerful emir of Western Asia, and after the death of the Seljuk sultan of Iconium in the year 1300, he proclaimed himself sultan. Thus was founded, upon the ruins of the Saracen, Seljuk and Mongol power, the Empire of the Osman, or Ottoman Turks, in Asia. After Osman, the courage, policy and enterprise of eight great princes, whom the dignity of caliph placed in possession of the standard of the prophet, and who were animated by religious fanaticism and a passion for military glory, raised the Empire to the rank of the first military power, in both Europe and Asia (1300–1566).

Period of Expansion. The first of these princes was Orkhan, son of Osman. He subdued all Asia Minor to the Hellespont and was the first to organize the Turkish power. Orkhan's son, Soliman, first invaded Europe in 1355. In 1361 Orkhan's second son and successor, Amurath I, took Adrianople, which became the seat of the empire in Europe, and he later conquered Macedonia, Albania and Serbia and defeated a great Slav confederation, under the Bosnian king Stephen, at Kossovo. Bajazet (ruler from 1389 to 1402) invaded Thessaly and advanced toward Constantinople. In 1396 he defeated the Western Christians under Sigismund, king of Hungary, at Nicopolis, in Bulgaria; but at Angora, in 1402, he was himself conquered and taken prisoner by Timur, who divided the provinces between the sons of Bajazet. Finally, in 1413, the fourth son of Bajazet, Mohammed I, seated himself upon the throne of Osman. Mohammed was succeeded by his son, Amurath II (1421–1451), who defeated Ladislas, king of Hungary and Poland, at Varna in 1444. Mohammed II, the son of Amurath, completed the work of conquest (1451–1481). He attacked Constantinople, which was taken on May 29, 1453, and the Byzantine Empire came to an end. After that time Constantinople was the seat of the Sublime Porte, or Turkish government. Mohammed added Serbia, Bosnia, Albania

and Greece to the Ottoman Empire, and threatened Italy, which was freed from danger by his death. His grandson, Selim I (Sultan from 1512 to 1520), conquered Egypt and Syria. Under Solyman II (1520–1566), the Ottoman Empire reached the highest pitch of power and splendor, but after his time, the race of Osman degenerated, and the power of the Porte declined.

Period of Decline. During the latter part of the sixteenth century and most of the seventeenth century, the chief wars which Turkey waged were with Venice and with Austria. The Battle of Lepanto in 1571, in which the Ottoman fleet was overthrown by the combined fleets of Venice and Spain, was the first great Ottoman reverse at sea; and the Battle of Saint Gotthard, in 1664, in which Montecuccoli defeated the Vizier Kiuprili, the first great Ottoman reverse on land. In 1683 Vienna was besieged by the Turks, but it was relieved by John Sobieski, and in 1697 the Turks were defeated at Zenta by the Austrians under Prince Eugene. Two years after this defeat, the Peace of Karlowitz was signed, by which Turkey agreed to renounce its claims upon Transylvania and a large part of Hungary, to give up the Morea to the Venetians, to restore the Ukraine to Poland and to leave Azov to the Russians. Eugene's subsequent victories at Peterwardein and Belgrade obliged the Porte, by the Treaty of Passarowitz, in 1718, to give up Belgrade, with a part of Serbia and Wallachia; but the Turks, on the other hand, took the Morea from Venice, and by the Treaty of Belgrade, in 1739, they regained Belgrade, Serbia and Little Wallachia, while for a time they also regained Azov.

Russia, which had been making steady advances under Peter the Great and subsequently, now became the great opponent of Turkey. In the middle of the eighteenth century, the Ottoman Empire still embraced a large part of southern Russia. The victories of the Russians in the war between 1736 and 1744 determined the political superiority of Russia, and compelled Turkey to renounce all sovereignty over the Crimea, to yield to Russia the country between the Bog and the Dnieper and to open its seas to the Russian merchant ships. By the Peace of Jassy, 1792, which closed the war of 1787–1791, Russia retained Tauride and the country between the Bug and the Dniester and gained some accessions in the Caucasus.

In the long series of wars which followed the French Revolution, the Ottoman Empire was first opposed to France, in consequence of Bonaparte's campaign in Egypt, and later to Russia, which demanded a more distinct recognition of its protectorate over the Christians. By the Peace of Bucharest in 1812, Turkey ceded to Russia the country between the Dniester and the Pruth. Further disputes ended in the Porte making additional concessions, which tended toward loosening the connection of Serbia, Moldavia and Wallachia with Turkey. In 1821 the war of Greek independence broke out. In 1826 the massacre of the Janizaries took place at Constantinople, after a revolt. In 1828 the Russians crossed the Balkans and took Adrianople, the war being terminated by the Peace of Adrianople in 1829. In 1831 Mehemet Ali, nominally pasha of Egypt, but real ruler both of Egypt and Syria, levied war against his sovereign and threatened Constantinople; but the Russians, who had been called on for aid by the sultan, forced the invaders to desist. In 1839 Mehemet Ali again rose against his sovereign; but through the active intervention of Austria, Great Britain and Russia, he was compelled to evacuate Syria, though he was recognized as hereditary viceroy of Egypt.

The next important event in the history of the Ottoman Empire was the Crimean War. In 1875 the people of Herzegovina, unable to endure longer the misgovernment of the Turks, broke into rebellion. A year later the Serbians and Montenegrins likewise took up arms, and though the former were unsuccessful and obliged to abandon the war, the Montenegrins still held out. Meantime, the great powers of Europe were pressing reforms on Turkey, and at the end of 1876 a conference met at Constantinople, with the view of making a fresh settlement of the relations between Turkey and the Christian provinces. All the recommendations of the conference were, however, rejected by Turkey; and in April following, Russia, which had been coming more and more prominently forward as the champion of the oppressed provinces and had for months been massing troops on both the Asiatic and the European frontier of Turkey, issued a warlike manifesto and commenced hostile operations in both parts of the Turkish Empire. The final settlement of this war was effected by the Treaty of Berlin.

The main events in the history of the Ottoman Empire from the Treaty of Berlin to the year 1890 were the treaty with Greece, executed under pressure of the great powers in 1881, by which Turkey ceded to Greece almost the whole of Thessaly and a strip of Epirus; the occupation of Egypt by Great Britain in 1882, and the revolution at Philippopolis in 1885, when the government of Eastern Rumelia was overthrown, and the union of that province with Bulgaria was proclaimed. In July, 1894, Constantinople was visited by a series of earthquakes, which lasted eight days, two or more occuring each day. Great damage was done to the city and surrounding country, and hundreds of people were killed.

For a number of decades the Turkish government had frequent revolts to deal with. The massacres occasioned by these uprisings aroused the sympathy of America and Europe, but the European powers would not interfere because it was believed that such interference might cause a general upheaval in Europe. In July, 1908, the Young Turks succeeded in a revolution which compelled the sultan to grant a constitution. The first Parliament under this constitution met in 1909. In April the troops in Constantinople revolted against the Young Turks, but troops from the country near by rushed to the capital, and gained control of the city. Abdul Hamid was compelled to abdicate, and his younger brother, Mohammed Rechad Effendi, ascended the throne with the title of Mehmed, or Mohammed, V. In 1912 Turkey lost Tripoli to Italy, resulting from a war of aggression on the part of the latter. Hardly had peace been arranged between Italy and Turkey, when war against Turkey was declared by the allied Balkan states. After several months of warfare the European powers interfered to end the struggle, and on May 30, 1913, Turkey accepted the terms of the Treaty of London. In October, 1914, Turkish warships bombarded the Russian port of Odessa, probably as the result of an agreement with Germany. This act, after reparation was refused, was accepted by Russia and its allies as a cause for war.

The World War and Its Effects. The military operations of Turkey are related in detail in the article WORLD WAR. The chief blot on Turkey's conduct in the struggle was the mistreatment of the Armenians, nearly two million of whom were massacred or were deported, as a result of which large numbers perished of starvation and exhaustion (see ARMENIA, for report of American Relief Committee). Germany's tacit acquiescence in this deplorable policy was widely condemned, and had much to do with turning American sympathy toward the allied cause. The chief instigator of the massacres, Talaat Pasha, resigned his office of Grand Vizier in October, 1918, when Turkey surrendered to the allies, and the Ottoman Empire came to an end. Later an attempt was made to bring Talaat Pasha and his accomplices to justice, but it was reported that they had escaped and that their whereabouts were unknown. Late in 1918 Mohammed V died, and was succeeded by his son, Mohammed VI, who was reported to be friendly to the allies. Conditions throughout the old Turkish domain were very unsettled for a long period after the armistice.

Related Articles. Consult the following titles for additional information:

CITIES

Adrianople
Constantinople
Smyrna
Trebizond

FORMER DEPENDECIES

Arabia
Armenia
Egypt
Kurdistan
Mesopotamia
Palestine
Syria
Yemen

HISTORY

Abd-ul-Hamid
Balance of Power
Balkan Wars
Berlin, Congress of
Bosporus
Byzantine Empire
Crimean War
Dardanelles
Gallipoli
Mohammed V
Russia
Russo-Turkish War
Seljuks
Solyman II
World War

TURKEY, a large game bird of the pheasant family, native to North America. There are only two species; one is found in Yucatan and Central America, and the other is the common wild turkey of Mexico and the United States. The wild turkey is a tall, handsome bird, the full-grown male weighing from ten to twenty-five pounds. The brilliant plumage has copper, bronze and green reflections. The head and neck are bare of feathers. The male, which is larger than the female, has a tuft of bristly feathers hanging from its breast. These birds feed on insects, seeds, berries and other small fruits. The nests are placed on the ground, and the eggs, twice the size of a hen's egg, are creamy white. One brood, usually consisting of about twelve, is reared a season. A second brood is raised only in case the first comes to grief. The birds are becoming rapidly exterminated. The domestic

turkey, which is derived from the Mexican wild turkey, is less brilliantly colored. Turkeys require about the same care as chickens. See GAME, color plate.

TURKEY BUZ'ZARD, or **TURKEY VULTURE**, the commonest of American vultures, so named because at a distance it resembles a turkey in appearance. The turkey buzzard is about two and a half feet long, and its wings extend to about six feet in breadth. It lives in most of the warmer regions of the United States and extends its habitat through Mexico and South America. See VULTURE.

TURKS, a race of Mongolo-Talei origin, widely disseminated throughout Western and Northwestern Asia and Southeastern Europe. They are divided into the Ottoman Turks, Turkomans, Kirghizes, Usbecks, Yakuts and other tribes. The Ottoman Turks developed in the Middle Ages to commanding military and political power, but have since greatly declined.

TUR'MERIC, an aromatic plant, native to Southern Asia; also a yellow dye prepared from its roots. Turmeric is used as a condiment in the Orient, being an important ingredient in curry powder. It is also useful in chemistry, in making test papers.

TURN'ER, JOSEPH MALLARD WILLIAM (1775–1851), an English landscape painter, member of the Royal Academy, first celebrated as a landscape painter in water colors and later in oils. In the first half of the nineteenth century he exhibited at the Academy more than two hundred pictures, easily becoming the most popular landscape painter of the English school. His works claim special merit because of their fine coloring effects. Details are often wanting, and drawing is imperfect, but the idealistic effect is unsurpassed. During the latter period of his work, however, he fell into a vague trifling with effects of light and shade and color, which somewhat lessened his great reputation. He bequeathed most of his pictures and sketches to the nation, on condition that a suitable building be erected for their reception. They have been placed in the Turner Gallery, occupying two rooms in the National Gallery in London. Some of his most noted paintings are *Slave Ship; The Fighting Temeraire; Rain, Steam and Speed on the Great Western Railway; Hannibal and His Army Crossing the Alps,* and *The Garden of the Hesperides.*

TURNER, NAT (about 1800–1831), an American negro slave, born in Southampton County, Va., who from earliest childhood claimed to be chosen and inspired for the accomplishment of a great purpose. In 1828, he declared that at a certain sign he would lead an insurrection against his enemies. In 1831, at an eclipse of the sun, he began carrying out this plan by killing five members of his master's family. Joined by other slave recruits, he continued the massacre until every person in the neighborhood had been murdered. On the following day the insurrection was broken up by a band of white men and by the arrival of Federal troops. Turner was captured October 30 and executed within a few days. The insurrection, known as the Nat Turner Insurrection, resulted in the passage of stringent laws for the management and punishment of slaves in most of the Southern states.

TUR'NIP, a biennial plant of the mustard family, much cultivated on account of its fleshy root. It was well known to the Greeks and Romans, and has been used as a vegetable in all temperate climates, being cultivated on a large scale in some countries as food for stock. Turnips may be planted succeeding the harvest of a crop of wheat or oats.

TURN'STONE, a shore bird of the plover family, with pied black and white plumage,

TURNSTONE

varied with rufous and ash, taking its name from its habit of turning up small stones in search for marine worms, minute crustaceans, etc., for food. It is found in almost every part of the globe during migrations, and breeds on rocky coasts in the Arctic regions, cunningly concealing its eggs, four in number, among the sparse Arctic vegetation.

TURNVEREIN, *toorn' fer ine*, German athletic organizations first established by Friedrich Ludwig Jahn about the beginning of the ninteenth century, and exerting an

enormous influence in building up a vigorous and hardy German population after the Napoleonic wars. In America turnvereins were first organized by German refugees in Philadelphia and Cincinnati, in 1848. They were subsequently extended to other cities with large German populations, the total membership attaining to about 40,000.

TUR'PENTINE, the distilled gum of the pine tree. Turpentine is manufactured by collecting the gum, or crude turpentine, from the trees and distilling it in copper vessels. The season begins when the first spring sap rises, and it ends when winter checks the flow of the sap. In January or February the trees are hacked. The hacks are about six inches deep; they are cut near the roots of the tree, and as close together, to the height of a man's head, as can be done without killing the pine. The hacker leaves a width of bark between each cut, so as to preserve the vitality of the tree. The sap or gum, fills the cuts with a clear, sticky, thick fluid, and this is removed with a dipper. The sap is deposited in barrels, which are scattered through the woods. The first sap which flows in the spring makes the best resin, and the poorest is the product of the hardened gum which is left on the sides of the cuts. This is removed by the *scraper,* who moves through the woods gathering the leavings.

The still is a copper vat, hooded with a close-fitting, air-tight cover, in which is a funnel, which, in turn, is connected with the *worm* of the still (see DISTILLATION). This worm runs down into another vat, near at hand, and in this vat the fumes, or vapor, of the heated gum are distilled into turpentine. Fire under the copper vat heats the gum, and the volatile parts rise to the funnel, pass into the still and are condensed by the water in the second vat into spirits of turpentine. The residuum left in the vat is the rosin of commerce, which is passed through a series of strainers and sieves to the barrels, which are made on the spot. The turpentine cannot be barreled so easily, for it will work through an ordinary barrel. It is placed in white pine barrels, which have been coated inside with several coats of strong, hot glue, which keeps the turpentine from soaking into the wood. The trees are worked for five or six seasons. All the turpentines dissolve in pure alcohol, and by distillation they yield oils, which are termed *spirits of turpentine.* Oil, or spirits, of turpentine is used to a limited extent in medicine. It is also much used in the arts, for dissolving resins and oils in making varnishes. See RESINS; ROSIN.

TURQUOISE, *tur'koiz,* a precious stone, of beautiful blue or green color due to the presence of copper. It is capable of taking a high polish, and has long been a favorite gem in the East, especially in Persia, where the finest specimens are found. When exposed to fatty acids, the turquoise loses its color and turns greenish, thus leading to the Oriental superstition that its dullness foretells misfortune. *Bone turquoise* is an imitation turquoise, composed of fossil bone colored by iron phosphate.

TUR'TLE, a name given to reptiles which differ but little from tortoises; in fact, *turtle* is the name commonly given to both genera. Turtles are found in all the seas of warm climates, and they feed mostly on marine plants. The most important species is the *green turtle,* which is from six to seven feet long and weighs from 700 to 800 pounds. Its flesh is highly esteemed as a table luxury.

Mud Turtle, the name commonly applied to small turtles of aquatic habits which prowl about the muddy bottoms of rivers and ponds in search of food. The common mud turtle is about four inches long, dull olive or brown above and yellow or pale brown below. Other species include the *Louisiana,* the *yellow-necked* and the *Mexican.*

Related Articles. Consult the following titles for additional information:
Leatherback Terrapin Tortoise

TURTLE DOVE, *duv,* a small European pigeon, pale grayish-brown in color, marked with a darker hue above and with a purple tinge on the feathers of its breast. Its cooing note is plaintive and tender. Its nest is loosely built in the crotch of a low tree or bush. The eggs are creamy-white, and are two in number. The similar North American species is known as the *mourning dove.*

TUSCALOOSA, *tus ka loo' sah,* ALA., the county seat of Tuscaloosa County, fifty-six miles southwest of Birmingham, on the Black Warrior River and on the Alabama Great Southern, the Louisville & Nashville and the Mobile & Ohio railroads. The city is in a rich cotton-growing and coal-mining region. The chief industrial establishments are cotton gins and compresses, iron works, lumber and flour mills, machine shops and creameries. Extensive improvements on the Black Warrior River have

opened that stream to navigation and added to the commercial advantages of the city. The University of Alabama is just a mile north of the city, and Tuscaloosa Female College, Alabama Central Female College and Verner Military Institute, Stillman Institute, Oak City Academy, University High School and the state insane asylum are all located here. The city was the capital of the state from 1826 to 1846, and the old capitol building is still a feature of interest. The place was settled in 1812 and was incorporated four years later. The commission form of government was adopted in 1912. Population, 1910, 8,407; in 1917, 10,824 (Federal estimate).

TUSCANY, *tus' ka ni*, a small department or province of Northern Italy. It comprised ancient Etruria, and the Etrurians (Etruscans) were the earliest known inhabitants of the peninsula. They became subject to Rome in the fourth century B. C. During the period of barbarian migrations they were overcome in turn by the Ostrogoths, the emperors of Constantinople and the Lombards. In the Middle Ages several of the cities of Etruria, notably Florence, Pisa and Genoa, became independent and prosperous, and in the latter half of the sixteenth century the Florentine possessions were formed into the Grand Duchy of Tuscany. From 1745 to 1859 Tuscany was under the rule of Germany; in 1861 it became by vote of its population a part of the kingdom of Italy.

Among the noted names of natives of Tuscany are the Medici, Giotto, Boccaccio, Dante and Petrarch. The dialect of Tuscany became the classical language of Italy.

TUSCARORA, *tus ka ro' rah*, a migrating Iroquoian tribe, which finally settled in New York and received as a sixth member in the confederacy. See FIVE NATIONS, THE.

TUSKEGEE, *tus ke'ge*, **NORMAL AND INDUSTRIAL INSTITUTE**, an industrial school for negroes, established in 1881 by the state legislature at Tuskegee, Ala. It began its sessions in a small church, and the thirty pupils were all taught by Booker T. Washington. The institution has enjoyed wonderful prosperity, and now owns 2,300 acres of land, scores of buildings and much valuable equipment. In 1918 a fund of $7,000,000 was awarded it from the Russell Sage estate. There are about 1,600 students and a faculty numbering about 200. Until his death in 1915, Booker T. Washington continued as head of the school, and to him is due much of the credit for its marvelous growth.

The object of the institute is to furnish its students with an education fitting them to become proper leaders of the people of their own race, and thus to bring about better moral and material conditions. The studies of the academic department are closely associated with the practical work in the shops and fields. Instruction and practice are given in mechanical drawing, engineering, blacksmithing, brickmaking, carpentry, canning, founding, harness making, carriage trimming, mechanics, painting, printing, milling, shoemaking, tinsmithing, tailoring, carriage making, farming, sewing, dressmaking, millinery, cooking, laundering, domestic service, mattress making, basketry, nursing and religious work. Students from all over the Union and from a score of foreign countries are in attendance. See WASHINGTON, BOOKER T.

TUS'SOCK MOTH, a family of moths named from the tufts of hairs, often bright-colored, appearing in the caterpillars. The moths are dull-colored, and the females of some species are wingless. Several varieties of this moth are very destructive to fruit, and shade trees, and forest trees, notable among these being the *gypsy moth*, the *browntail moth* and the *white-marked tussock moth*. Of the latter there are two or three generations each summer, and the young caterpillars are extremely voracious. Trees are protected against these moths by winter pruning and burning of the cocoons, and by summer spraying and banding of trees. See GYPSY MOTH.

TWAIN, MARK. See CLEMENS, SAMUEL LANGHORNE.

TWEED, a twilled wool or wool-and-cotton fabric for men's wear, with an unfinished surface and of two colors, usually combined in the yarn. It is largely manufactured in Southern Scotland and takes its name from the Tweed River, along which it was first made.

TWEED, a river of Great Britain, ninety-five miles in length, rising in the southeastern part of Scotland and flowing easterly and northeasterly into the North Sea. The lower part of its course forms a part of the boundary between Scotland and England.

TWEED, WILLIAM MARCY (1823-1878), an American politician, notorious as the leader of the famous "Tweed Ring" in New York City. As a member of the famous

Tammany Hall, he gained immense influence and with the help of several unscrupulous supporters formed a combination for the political control of New York City. By the bribery of legislators and judges, bills were passed and decisions rendered which allowed the ring to carry out vast schemes of improvement, through which, by the padding of pay rolls and the auditing of fraudulent bills, they gained immense wealth. The régime lasted for more than six years, during which time the debt of the city was increased from $20,000,000 to $101,000,000. Finally, in 1871, through an exposure by the New York *Times* and a vigorous prosecution under a committee led by Samuel J. Tilden, the ring was broken up. Tweed was twice tried, finally convicted and sentenced to twelve years' confinement in the penitentiary and a fine of more than $12,000. He was released two years later on a legal technicality, but was immediately rearrested on a suit for damages to the amount of more than $6,000,000. While confined in jail awaiting trial, he escaped and fled to Spain. Finally, being captured, he returned to America, where he died in jail.

TWELVE TABLES, Law of the, the earliest written code of law among the Romans. According to tradition it was drawn up to appease the plebeians, who had complained that they were not getting justice from the patrician judges. In 451 B. C., ten magistrates, called *decemvirs,* were elected to draft the laws, and the following year they submitted these to the people. The laws were afterwards written on brass tablets and placed in the Forum, over the orator's platform, where everyone might read them. These laws formed the basis of Roman legislation for centuries.

TWILIGHT, *twi'lite,* the glow in the sky before sunrise and after sunset. Twilight is caused by the refraction of the sun's rays as they pass through the atmosphere. The evening twilight is brightest immediately after sunset and continues to fade until the sun reaches 18° below the horizon, when twilight ceases. The time required for the sun to reach this point varies in different latitudes. In the torrid zone, where the sun's path throughout the year takes nearly the same direction as the parallels, twilight is of short duration, but in summer its duration increases toward the Poles, and near the Arctic Circle it lasts all night.

TWILIGHT SLEEP, the name commonly applied to a method of applying anesthetics during childbirth. It originated at the hospital at Freiburg, Germany, and has been attempted, with varying success, in other countries. The Freiburg method consists in the administration of measured doses of morphine and scopolamine, these being given at specified intervals. Under ideal conditions, and when the method operates successfully, the patient comes out of the ordeal with no recollection of pain. Undoubtedly in successful cases the mother is greatly benefited by the method, as the elements of shock and exhaustion are reduced to a minimum. Twilight sleep has been tried in the best hospitals in America, but the results have not always been satisfactory. It is practicable in certain selected cases, but the proper conditions of light, quiet and attendance cannot be produced in the ordinary household, and it is declared that promiscuous adoption of the method would result in great harm.

TYCHO BRAHE, *te'ko brah'eh,* or *brah.* See Brahe, Tycho.

Grave, Richmond, Virginia.

TYLER, John, (1790–1862), the tenth President of the United States, and the first "accidental" President, so-called because as Vice-President he succeeded automatically to the higher office through the death of the duly-elected executive.

Early Career. Tyler was a Virginian, born at Greenway, March 20, 1790, the son of John Tyler, Sr., who was at various times judge of state and Federal courts, speaker of the Virginia house of delegates and governor of the state. The future President was fortunate in his ancestry. By the time young Tyler was nineteen years of age he was a practicing attorney, and when twenty-one was a member of the state legislature, where he served for five consecutive terms, leaving that post only to go to Congress, to which he was elected in 1816, as a Democrat.

After two terms in Congress, he was returned to the state legislature in 1823, and two years later became governor of Virginia, the state promoting the son to the post with which it had once honored his father. After

two terms as governor, Tyler was elected to the United States Senate, in which body he took his seat in 1828.

Independence had been his chief characteristic in political life; though he was a Democrat, not always did he support the Democratic program. In the Senate the nation found him to be a stubborn man, who could not be moved from a position once deliberately taken. He came prominently into notice by opposing the tariff measurers of 1832 and 1833, and was the only Senator to oppose the Force Bill of 1832. He had supported Jackson for the Presidency, but in 1834 made a report censuring the President for removing deposits from United States banks. The Virginia legislature ordered him to vote to expunge the vote of censure, but this Tyler refused to do, and soon he resigned from the Senate and retired to private life.

He became a leading member of the new Whig party, and sought to have the party name him for the Vice-Presidency in 1836. This effort failed, but in 1840 a chain of circumstances gave this former Democrat the coveted office. He was nominated on the Whig ticket with William Henry Harrison, the choice of Tyler being largely attributed to the Whig desire to secure the votes of Democrats who were dissatisfied with the two preceding administrations, which had brought upon the country the panic of 1837. Harrison and Tyler received 234 electoral votes; the opposition, 60. On March 4, 1841, the new administration assumed control of the government, and on April 4 President Harrison died.

Tyler as President. There was a stronger man than Tyler in official Washington; this was Henry Clay, the acknowledged leader of the Whigs. Clay looked upon the Presidental election as a vindication of his course in politics; Tyler considered the result to be merely a rebuke of the preceding administration. There was soon a clash of factions, and Tyler, the President and nominal leader, broke with the party.

The incident which caused the breach was legislation respecting a second United States Bank. Tyler approved the abolition of the sub-treasury system, but would not consent to another United States bank, which Congress favored. Twice he vetoed a bank bill; after this second refusal to carry out the wishes of the party all the Cabinet resigned, with the exception of Daniel Webster, who

Administration of John Tyler, 1841-1845.

I. John Tyler
- (1) Birth
- (2) Parentage
- (3) Education
- (4) Early career
- (5) Public life after breach with Jackson
- (6) Career after end of his term
- (7) Character
- (8) Death

II. Governmental Affairs
- (1) Domestic
  - (a) President's quarrel with Whigs
- (2) Results
  - (a) Resignation of Cabinet
  - (b) Tyler read out of his party
- (3) Foreign
  - (a) Webster-Ashburton Treaty
    - (1) Negotiators
    - (2) Settled Maine boundary dispute
    - (3) Other settlements

III. Internal Affairs.
- (1) Dorr's Rebellion
- (2) Patroon War
- (3) The Mormons
  - (a) At Nauvoo
  - (b) In Utah
- (4) Dedication of Bunker Hill Monument
- (5) Construction of first telegraph line
- (6) Discovery of copper

Questions on Tyler

When and where was John Tyler born?

What public offices did he hold before his inauguration as President?

What were Tyler's views on internal improvements?

Why did the Whigs resign from the Cabinet?

Why was the South anxious to annex Texas?

Who was Lord Ashburton?

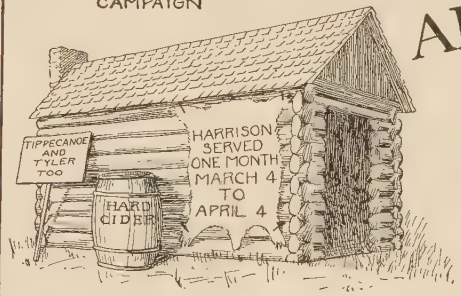
What disputes did the Webster-Ashburton Treaty settle?

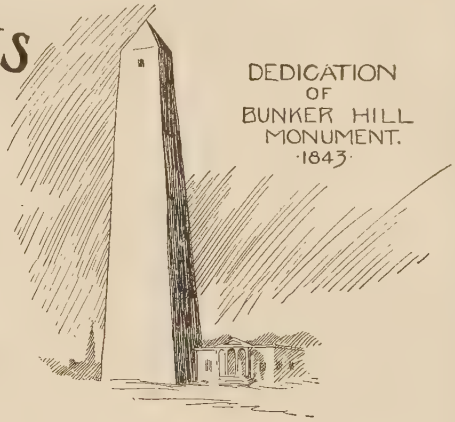
Explain Dorr's Rebellion.

ADMINISTRATIONS OF HARRISON AND TYLER

1841 — 1845

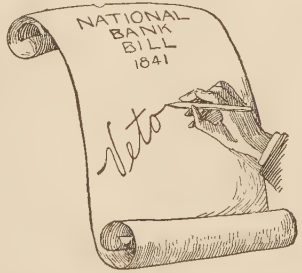
LOG CABIN CAMPAIGN





DEDICATION OF BUNKER HILL MONUMENT. 1843

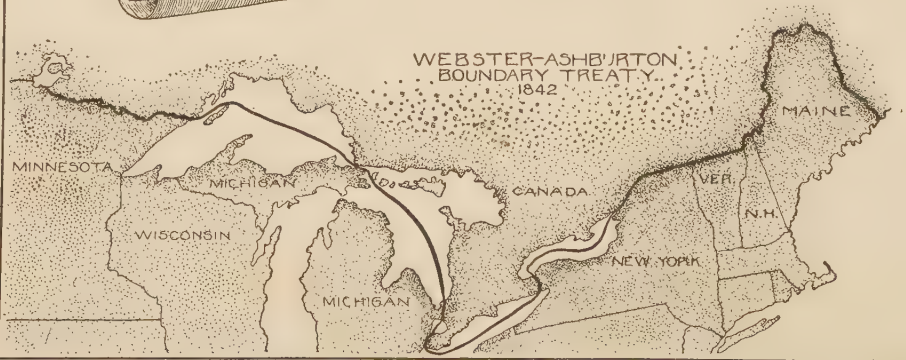
FIRST TELEGRAPH LINE 1844



IMPORTANT EVENTS

DORR'S REBELLION – 1842.
SCREW PROPELLER INTRODUCED INTO U.S. NAVY – 1844
TROUBLE WITH MORMONS – 1844.

FLORIDA ADMITTED 1845



COPPER DISCOVERED IN MICHIGAN 1844

H.M. HAINES

wished to conclude the Webster-Ashburton Treaty, then the subject of negotiation.

Most of the Whigs thereafter refused to recognize Tyler as a party leader. The Democrats rallied to his support, however, and in the Congressional elections of 1842 they overthrew the Whig majority and established themselves in the House by a majority of sixty-one—a change of eighty-six votes.

Legislation for the remainder of the Presidential term was in part a matter of compromises; the Whigs did not again press the bank act, and on some measures they acted with the President. A protective tariff bill was passed. Two river and harbor bills were presented, one for the eastern part of the country and another for the western section, the former being vetoed and the other signed by Tyler, because it contained appropriations for the Mississippi River, which he believed would be a national, not a sectional, benefit. The Webster - Ashburton Treaty was one of the outstanding features of the administration. Texas was annexed to the Union on March 3, 1845, the day before Tyler's term ended. Other and minor events are listed in the accompanying outline.

JOHN TYLER

As Ex-President. After his retirement from office Tyler spent several quiet years on his estate, three miles from his birthplace. The threat of civil war called him again into public life, and in February, 1861, he presided over a convention of the border states, held in Washington, D. C., and called to consider the situation presented by the secession of South Carolina. When Congress refused to accept the recommendations of the convention Tyler urged his own state to secede, and in the fall of 1861 he was elected to the Confederate Congress. In January, 1862, he died, and was buried in Hollywood Cemetery, Richmond. In 1914 Congress appropriated $10,000 for the erection of a monument in his memory.

Related Articles. Consult the following titles for additional information:
Force Bills
Harrison, William H.
Webster-Ashburton Treaty

TYLER, Tex., the county seat of Smith County, about 100 miles southeast of Dallas, on the International & Great Northern and the Saint Louis Southwestern railroads. The city is the center of the fruit-growing region of Eastern Texas. It ships large quantities of cotton, fruit and garden products. Industrial establishments include railway shops, canneries, box and crate factories, ice works, an oil mill, mattress and overall factories and potteries. Tyler and East Texas colleges are located here. Noteworthy structures are a city hall, a Federal building, a Carnegie Library and a railroad hospital. The place was settled in 1846, and was chartered as a city in 1875. It adopted the commission form of government in 1914. Population, 1910, 10,400; in 1917, 12,101 (Federal estimate).

TYLER, Wat, an English soldier, in 1381 a leader of what is known as *Wat Tyler's Rebellion.* When a poll tax was levied on the already overburdened English people, riots broke out, and a mob, led by Tyler, marched on London, pillaging as it went. The young king, Richard II, rode out to meet the rebels. He promised to grant them charters of freedom and amnesty and many of them, satisfied, dispersed. But Tyler, growing bold and insolent, made further demands, and William Walworth, mayor of London, stabbed him. The liberties granted were soon revoked, but the movement had the effect of hastening the general tendency toward the abolition of villenage.

TYNDALE, *tin'dal,* William (?-1536), an English reformer and translator of the Bible. He studied at Oxford and Cambridge and was ordained priest about 1521. Having made himself unpopular by the expression of certain heretical sentiments, he left England for the continent in 1524. After a visit to Luther at Wittenberg, he settled at Cologne, where he completed a translation of the New Testament, and on his expulsion from Cologne, he took refuge in Worms, where, in 1525, his translation was published. He translated the *Pentateuch* and the book of *Jonah.* When he openly opposed the divorce of Henry VIII from Catharine of Aragon, he was imprisoned in the castle of Vilvorde, near Brussels, and after a trial for heresy, he was strangled and his body was burned. In addition to the works mentioned, he wrote *The Obedience of a Christian Man* and *How Christian Rulers Ought to Govern.*

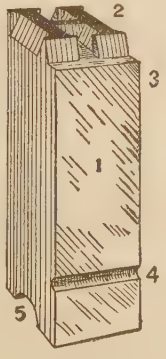
TYN'DALL, John (1820–1893), an Englishman and one of the world's greatest physicists, was born at Leighlin Bridge. He

was largely self-taught, gaining his first scientific training as an ordnance surveyor and railway engineer. After teaching mathematics at Queenwood College, he went to Germany for study and received a doctor's degree from the University of Marburg. He became a professor of natural philosophy at the Royal Institution in 1853, and on the death of Faraday was appointed director. While he gave his chief attention to a study of radiant heat, he also made important experiments with light. In 1872 and 1873 he lectured in America.

JOHN TYNDALL

Especially noteworthy was his effort to popularize science—to bring it within the reach of ordinary men. *Fragments of Science for Unscientific People, The Glaciers of the Alps* and *Hours of Exercise in the Alps* are among his "popular" writings. Other noteworthy books are *Heat as a Mode of Motion, Lectures on Light, On Sound* and *Contributions to Molecular Physics in the Domain of Radiant Heat.*

TYPE, a piece of metal, wood or other material, on one end of which is cast or engraved a letter, figure or other character. The earliest types were made of wood, and in style they resembled the script letters used in copying books before the invention of the art of printing. The parts of a type are (1) the body, (2) the face, (3) the shoulder, (4) the nick and (5) the groove. The *face* is that part that does the printing; the *nick* is to show the right side of the type when set, and the *groove* is to make it stand firmly on its base. In the early days of printing, each printer made his own type, but with the extension of the industry, type casting, or founding, became a business by itself. A few of the large types used in printing are still made of wood, but all others are of type metal, which is an alloy, consisting of three parts of lead to one part of antimony, with a small quantity of tin and copper added.



A TYPE

Type are cast by machinery. A steel die, which is an exact pattern of the letter, is first made. This is driven into a piece of soft copper, so as to form a perfect impression of the letter. This is called the *matrix.* The matrix is then placed in a metallic box, called the *mold.* This is placed in the type-casting machine, which opens and closes the mold and fills it with type metal. The metal hardens instantly, and when the mold opens the type drops out. The face is then smoothed on a stone, and the body is nicked and grooved. The type are then tied up in packages, each of which contains only one kind of letter, and are ready for use. All types are ninety-two hundredths of an inch high.

A complete assortment of type is called a *font* and contains large and small capitals, small letters and italics, marks of punctuation and figures; in all, there are about 225 characters for English printing. The size of a font varies according to the work to be done with it. Small fonts contain from 500 to 800 pounds, and large ones have from 20,000 to 50,000 pounds. Type founders have a rule for determining the number of different letters necessary to make each font complete. Z requires the smallest number. For every *z* there will be 46 *a*'s, 60 *e*'s, 32 *h*'s, 15 *m*'s, and so on.

There are thirteen sizes of type in ordinary use in printing books and newspapers. These are designated by special names and by the number of points they measure, a point being 1/72 of an inch. Both methods of naming are given in the illustration.

Nonpareil 6-point
Minion 7-point
Brevier 8-point
Bourgeois 9-point
Long Primer 10-point
Small Pica 11-point
Pica 12-point
English 14-point

The smaller sizes are not used in general printing, although sometimes small Bibles are printed from 5½ point, or agate, and still smaller sizes are used for marginal references in Bibles and other works. The type used in job printing is of various sizes, to suit the taste and conditions of the advertiser. See PRINTING.

TYPE'SETTING MACHINES. See LINOTYPE; MONOTYPE.

TYPEWRITER, a machine for the rapid transcribing of letters, manuscripts, etc., as a substitute for handwriting. It was first successfully put into operation in 1875, and since that date has made its way into every kind of business house, court of law and governmental department where speed, accuracy and system in correspondence, the making of reports and tabulating of statistics are required. An average typewriter operator writes sixty words a minute, a rate three times that of a good penman, and the characters are much more legible. As women are the best operators of typewriters, the effect has been to bring thousands of them into the business world, where they have found opportunity to advance to responsible secretarial and executive positions.

The essential parts of the typewriter mechanism are a set of types; an arrangement of keys, for bringing the types in contact with the paper; a paper carrier, or carriage; a platen, or roller, against which the types strike, and an inking device. While there are many patterns of typewriters, from the earliest "Remington" to the latest make, full of new devices, all belong to two classes, those known as the *basket* machines and those known as *cylinder* machines. In the basket machines, each type is on the end of a bar, hung on a pivot and joined to its respective key by a lever attachment. These type bars are attached to a frame which was formerly circular, forming the basket from which the machine takes its name. In modern machines the frame is an arc of a circle. The bars are of such length that the type on each strikes the platen at the same point. When a key is depressed, the bar strikes the inking ribbon against the paper, making the impression of the character. As the bar drops back to its position, the carriage moves forward one space, thus putting the paper in position for the next letter.

The cylinder machines have the type arranged on a cylinder, and the depression of the key causes the cylinder to revolve to a point which allows the character desired to be pressed upon the paper by a little hammer. The arrangement of keys on all makes of typewriters is practically the same; the so-called universal keyboard is in use with but slight modifications on over ninety per cent of all models.

TYPHOID, *ti foid',* **FEVER,** a germ disease caused by the presence of a bacillus which lodges in the intestines, spleen and mesenteric lymph nodes. The multiplication of the bacilli causes ulceration of the intestines, and when the ulcers perforate the intestinal membranes the disease is fatal. Typhoid germs enter the system through the mouth, from whence they find their way to the intestinal tract. Food and drink are the most common vehicles which serve as conveyors of the bacillus, and polluted water and milk are the most common sources of infection. Water containing sewage is a particularly dangerous carrier of bacilli.

Symptoms and Treatment. It requires from eight to fourteen days for the disease to develop after the germs have entered the system. The attack usually comes on slowly, and the patient may continue his regular work for a few days, but ultimately he will have to go to bed. The first symptoms are nausea, headache, pains in the back and limbs and sometimes nosebleed and chills. During the first week the fever rises about one degree a day, until the temperature reaches 103° or 104°. The fever remains stationary the second week; during the third week it should begin to subside, and convalescence should begin the fourth week, unless the case is one of unusual severity. Sometimes the ulcers penetrate the blood vessels of the intestines and cause hemorrhages, which may prove fatal. When the fever begins to decline the patient is in grave danger; he suffers from weakness, tremors of the muscles and possibly delirium, and he may die from weakness.

The treatment for typhoid fever is largely hygienic. The fever is kept down by sponging, and by cold packs and baths. Liquid nourishment, consisting of milk and broths, is given at intervals of about three hours to keep up the patient's strength, and medicines to counteract the effects of the germs are administered. Proper nursing is the most important part of the treatment.

Prevention. Excretions from the bowels and the urine of one affected with typhoid fever contain millions of germs, and all bodily discharges should be disinfected by strong solutions of corrosive sublimate, carbolic acid or chloride of lime. The bedding and clothing should be immersed in boiling water. All dishes, thermometers or other appliances used about the patient should be thoroughly dis-

infected every time they are used. Flies, when they have access to infected substances, gather the germs on their feet and carry them to other households. They are one of the prolific causes of the spread of the disease.

Typhoid is not contagious by the breath or by touch; it is conveyed only by carrying the germs. Vaccination with three hypodermic injections of a special vaccine is considered to render one immune for three years; army surgeons attribute the protection of the allied forces during the World War to this method of prevention. There have been widespread educational campaigns to teach people how to prevent typhoid fever, and as a result of this work there has been a marked decline in the number of cases since the beginning of the present century. The following directions issued by the New York City Department of Health should be observed by every family and community:

Keep yourself in good health. Do not use alcoholic drinks. Keep your home and your body clean. Always wash your hands before eating. Drink only the best milk; if in doubt, boil it. Drink only pure water; if in doubt, boil it. Eat only pure, good food. Fresh-cooked food is safest; heat kills the germs. Avoid salads, raw vegetables and raw oysters, unless you know they come from a clean place. Wash ice when it comes and keep the ice-box clean. Do not put ice in drinking water or on food. Deal only with good, clean food stores. Don't eat at dirty restaurants. Keep flies out of your rooms and away from your food. Be careful when you go to the country; be sure of what you eat and do not drink from a strange spring or stream. Never visit where there is a case of typhoid fever. Be careful about friends who have had typhoid fever; they may be carriers. Where there is an outbreak of typhoid fever use only boiled water for drinking, and also boil milk just before it is used. If typhoid fever is in your house or neighborhood, or you are exposed to the disease in any way, or are likely to be, have yourself immunized.

TYPHOON, *ti foon'*, the name applied to the hurricanes that sweep over the coast of China, and Japan and the neighboring archipelagoes from May to November. The storms are most frequent and disastrous in July, August and September. The typhoons are cyclonic storms, which originate somewhat farther south than Manila and move towards Indies. See HURRICANE.

TYPHUS, *ti' fus*, **FEVER**, known, also, from the place where it occurs, as *hospital fever, jail fever* and by other names, is essentially a fever of the poor, ill-fed and badly-housed inhabitants of large cities. It is infectious, and is carried by both body lice and head lice. A period of from five to twelve days passes after infection, before the first symptoms show themselves. Then the disease comes on suddenly, with a chill, followed by a high fever, sharp rheumatic pains and headache. Generally about the seventh day, a rash, of irregular spots of dusky hue, appears over the chest and back, and this has given to the disease the common name of *spotted fever*. Delirium is almost always present during the second week, and after a marked crisis, followed by a sound sleep, the person awakes with the fever gone. Thereafter recovery is rapid. The disease is often fatal, especially where the best of care is not given the patient.

The treatment consists in keeping the sufferer in a well-ventilated room, and in preventing exhaustion by light, wholesome diet. One of the worst epidemics of typhus fever known in recent times occurred in Serbia in 1914–1915. Several cases were carried to New York by passenger steamers, and during the study of these cases Dr. Plotz discovered the germ which causes the disease.

TYRE, tire, one of the most celebrated cities of ancient Phoenicia, on the Mediterranean Sea, fifty miles south of Beirut and twenty-four miles southwest of Sidon. From 1200 to 850 B. C., it was a wealthy and magnificent city, the chief commercial center of the world, famous for its dyes and glassware. The original city occupied an island three-fourths of a mile from the mainland. In 332 B. C., when Alexander the Great besieged the city, he built a causeway out to the island, and the sands deposited by the sea upon this structure transformed the island into a peninsula. The modern town, called Sur, has a population of about 6,000.

TYROL, or **TIROL**, *tir'ol*, before the dissolution of the Austro-Hungarian monarchy in 1918, a crownland of Austria, comprising the greater part of the political district of Tyrol and Vorarlberg. It lies in the heart of the Alpine region, and is noted for the charm and variety of its scenery, which is much like that of Switzerland. Tyrol has an area of 10,302 square miles and a population of about 947,000. The capital is Innsbruck. As a portion of the inhabitants are Italians, Italy laid claim to a part of the crownland at the close of the World War. The boundary question was to be settled by the League of Nations as soon as it began to function.

U, the twenty-first letter and the fifth vowel in the English alphabet. It comes from the Greek alphabet, as the Phoenician had no such character, and it was, until comparatively recent times, used interchangeably with *v*. In time, *v* came to be used for the consonant sound and *u* for the vowel sound, as in the case of *j* and *i*. The true primary sound of *u* was that which it still retains in most of the languages in Europe, that of *oo* in *cool*, the sound being sometimes short, sometimes long. The so-called "long *u*" in English, however, has a distinct *y* sound prefixed to the *oo* sound, as in *use, abuse*.

U'DALL, Nicholas (1506–1556), the author of *Ralph Roister Doister*, the earliest English comedy. He was master of Eton School from 1534 to 1541, and the play was originally written for performance by the scholars. Udall was in favor at court as a writer of pageants and interludes.

UFFIZI, *oof feet' se*, a famous palace in Florence, containing one of the most extensive and valuable art collections in the world. This gallery was founded by the Medici family in the fifteenth century, and valuable additions have been made from time to time. In the collection are the statues *Venus de' Medici*, *The Dancing Faun* and *The Wrestlers*, and the works of great masters, such as Raphael, Michelangelo, Titian, Correggio, Holbein and Rembrandt. The Uffizi also contains the Biblioteca Nazionale, a collection of 300,000 volumes and 14,000 manuscripts. It is connected by covered passageway with the Pitti Palace (which see).

UGANDA, *oo gahn'da*, the administrative division of British East Africa that forms the western part of the colony. It consists of the former native kingdom of Uganda and a number of adjacent states. Its area is 109,119 square miles, practically that of the state of Nevada. Of this area, 16,377 square miles are water, for within the boundaries lie portions of Victoria Nyanza, Lake Edward, Lake Albert and Lake Rudolph, and all of lakes George, Kioga and Salisbury. The region around Lake Rudolph is low and generally unproductive. The western and southwestern parts of the protectorate consist of rolling country and plateaus, varying in altitude from 2,000 to 4,000 feet, upon which mountain peaks rise to the height of 12,000 to 16,000 feet. Here are some of the most prominent mountains of Africa including the Ruwenzori, whose highest summit, Alexandra, has an altitude of 16,794 feet.

Gold is mined, and there is an abundance of iron throughout the country. Although the natives are quite skilful in working the ore, there is but little mining. With the exception of the Lake Rudolph region, the soil is generally fertile. The climate in the highland region of the southwest is pleasant and inviting, and this part of the protectorate holds great possibilities. Commercially, cotton is the most important crop, and its cultivation is being rapidly extended. Coffee, peanuts and cacao are among the other leading crops. Ivory and hides are exported.

In 1917 there were 2,954,861 inhabitants, and about 2,900,000 of these were natives. The Bantus, who are agriculturists, and the Baganda are the most important tribes. The Baganda, who number about 600,000, are noted for their intelligence. Most of them have embraced Christianity, and they are rapidly adopting the ways of civilization. They build permanent homes, and have done much in constructing roads and in developing the country since it was opened to Europeans. The country has railway, steamboat and telegraph communication.

The protectorate is divided into five provinces for the purpose of local administra-

tion. The native tribes maintain their own form of control in all local measures, and some of these governments are very efficient. Entebbe is the seat of government and British headquarters, and Mengo is the native capital.

Uganda was first visited by Captain Speke in 1862. It was again visited in 1875 by Stanley, who wrote an extended description of the country and its people for his *Through the Dark Continent.*

UHLANS, *oo' lahnz,* bodies of mounted lancers, chiefly employed in reconnoitering, skirmishing and outpost duty. They were of Eastern European origin, and formerly wore a semi-Oriental uniform with flowing sleeves and baggy trousers. Later, Uhlans became a part of several western armies. In the World War (1914–1919) the term was particularly applied to the Prussian light cavalry troops.

UINTA, *u in' tah,* **MOUNTAINS,** a mountain range in Northeastern Utah, a part of the Rocky Mountain system, jutting at right angles from the Wasatch range. Its highest peaks are Gilbert Peak, 13,687 feet above sea level; Emmons Peak, 13,624 feet, and Wilson Peak, 13,300 feet. The Green River gorge cuts across the Uinta range, disclosing the varied strata of the mountains, some of which contain deposits of coal.

UKRAINE, THE, called also UKRAINIA, a district in the southwestern part of European Russia, proclaimed an independent republic in November, 1917, at the time of the overthrow of the Kerensky régime by the Bolsheviki. The Ukraine is made up of those former Russian provinces inhabited by the Little Russians, or Ruthenians. Its estimated area is 216,400 square miles, and the population is about 30,000,000. Kiev is the capital. The Ukraine occupies a portion of one of the most fertile districts in Europe, and has been called the "granary of Russia."

Its career since the downfall of the czar has been very troubled. The government established in 1917 sent peace delegates to Brest-Litovsk, and a treaty with the Central Powers was signed on February 9, 1918. Germany expected to obtain large supplies of grain from the Ukrainians, but the peasants, who were angered by the methods employed, burned the stores in preference to handing them over to the Germans.

After the armistice was signed it was hoped that order might be restored, but the Ukraine shared all the troubles of the other border Russian states. Its claims to the province of Galicia were disputed by Poland, and there was conflict with the Rumanians over Bessarabia. In addition, the Bolshevik government of Russia proper sent a "red" army into the region to establish soviet rule. The new republic was engaged in continual fighting for months after the armistice of November, 1918, and by August, 1919, no settlement had been reached, though the Bolsheviki were in partial control. See RUSSIA; WORLD WAR.

ULCER, *ul' ser,* an open sore on the skin or any of the mucous membranes, both external and internal. The tendency of an ulcer is to eat away the underlying tissues. An abscess, on the other hand, usually begins in the tissues and works outward (see ABSCESS). Ulcers may be caused by constitutional disorders or through infection. Treatment consists in giving the patient fresh air, proper diet and hygienic surroundings, and providing local treatment for the sore. Such treatment must be prescribed by the attending physician. Ulcers due to tuberculosis can often be healed by exposure to sunlight.

ULTRAMARINE, *ul trah ma reen',* a beautiful and durable sky-blue pigment, a color formed of the mineral called lapis lazuli. This substance is much valued by painters, on account of the beauty and permanence of its color, both for oil and water painting.

ULYSSES, *u lis'eez,* called by the Greeks ODYSSEUS, one of the most famous of their legendary heroes, an important character in the *Iliad.* Rejected by Helen, Ulysses married Penelope and settled down with her to a happy life. Shortly after the birth of his son Telemachus, the Trojan War broke out, and Ulysses, in spite of a vow to help Menelaus, was unwilling to leave home and engage in the struggle. In order to escape, he feigned madness, but Palamedes visited him and, becoming convinced of his sanity, made use of a stratagem. While Ulysses was plowing up the seashore and sowing it with salt, Palamedes placed the boy Telemachus in front of his father's plow, and Ulysses, carefully turning aside his team, unwittingly revealed the fact that his madness was merely feigned.

He was compelled to join the expedition and at Troy proved himself one of the bravest of the Greek heroes. The chief interest in Ulysses, however, attaches to his adventures while he was returning from Troy. Driven

to the country of the Lotus-eaters, he with difficulty broke the spell cast upon his companions and induced them to continue the voyage. Meeting with Polyphemus the Cyclops, he put him to death, thus offending Neptune, who constantly pursued him with his wrath. He was driven upon the island of Circe; he was placed in danger between Scylla and Charybdis, and he was borne, after the death of all of his companions, to the island of the nymph Calypso, where he remained for seven years. Returning at last to Ithaca, he found Penelope in great trouble, but with the aid of Telemachus overcame her annoying suitors and made himself powerful again in his kingdom.

Related Articles. Consult the following titles for additional information:

Calypso
Circe
Penelope
Polyphemus

UMBELLIFERAE, *um bel if'ur ee,* the parsley family of flowering plants, containing about 2,000 species, among which are the familiar garden varieties, carrot, parsnip, celery, anise, parsley, fennel and caraway. The flowers, usually inconspicuous and individual, are arranged in large umbrellalike groups, called umbels. The leaves contain oil and a resinous matter, sometimes of a poisonous character. The umbelliferae are distributed throughout the world, but are most abundant in the north temperate zone.

UM'BER, a mineral pigment resembling ochre, yielding a brown paint when raw and a reddish paint when burnt. It is found in many localities in Europe, notably the island of Cyprus, and takes its name from Umbria, Italy, where it was first discovered. There are veins of umber in Illinois, Pennsylvania and several other states.

UMBREL'LA BIRD, a black South American bird, related to the crows and remarkable for its handsome drooping crest of blue-black feathers. It lives in the deep woods, depositing its eggs on a platform of sticks in the top of a high tree. Its cries are described as "lowings."

UNALASKA, *oo nah lahs'kah,* one of the largest of the Aleutian Islands, about seventy-five miles long and twenty miles wide at its widest point. The chief settlement is Unalaska, or Iluliuk, on the north side of the island. Population, 420. See ALEUTIAN ISLANDS.

UNCAS, *un'kahz* (?–about 1683), an American Indian chief, born in the Pequot settlement in Connecticut. In 1635 he rebelled against the head chief of the Pequots and founded a tribe of his own known as the Mohegan. In 1637 he combined with the colonists for the destruction of the Pequots and was given a portion of the conquered territory. His friendly intercourse with the colonists aroused the jealousy of the Narragansetts, who made war upon the Mohegans, and for the next few years Uncas was almost continually defending his territory from invasion. A monument has been erected in Norwich, Conn., in his honor.

UNC'TION, or EXTREME UNCTION, a sacrament of the Roman Catholic Church, administered to the dying to give them strength and grace physically and spiritually in the hour of death. In this sacrament, the priest, dipping his thumb in the oil, anoints the sick person in the form of the cross upon the eyes, ears, mouth, nose, hands and feet, saying, "Through this Holy Unction and His most tender mercy, may the Lord pardon thee whatever sins thou hast committed by seeing. Amen." He repeats the same, adapting it to the part anointed. The oil used in this sacrament must be blessed by the bishop, a ceremony performed each year on Maundy Thursday.

UN'DERGROUND RAIL'ROAD, the name applied to a method used by Northern abolitionists before the Civil War in assisting slaves from the South to escape from their masters. Regular routes were laid out, and certain houses at convenient intervals were designated as stations. Fleeing negroes were conducted secretly from one of these points to the next, given rest and food and prepared for the next stage in their journey. The most common routes were through Ohio and Pennsylvania, the goal of each being Canada. Among the prominent promoters of the underground railroad were Gerrit Smith, Theodore Parker and Levi Coffin. It is believed that fully 25,000 negroes were thus given liberty during the quarter century preceding the Civil War, fines inflicted on detection for violation of the Fugitive Slave Law having little effect on the abolitionists. An interesting account of the system occurs in Mrs. Stowe's *Uncle Tom's Cabin.*

UNDERGROUND RAILWAY. See SUBWAY.

UNDERWOOD, OSCAR W. (1862-), an American statesman, one of the prominent Democrats in Congress of the present

decade. He was born in Louisville, Ky., and was educated in that city and at the University of Virginia. After completing a law course, he was admitted to the bar in 1884 and began practice in Birmingham, Ala. Entering politics, he was elected to Congress and took his seat in the lower house in 1895 as Representative of the Ninth Alabama district. This office he held until 1915. In the special session of Congress called by President Wilson in 1913 to revise the tariff, Underwood, who was chairman of the Ways and Means Committee and majority leader in the House, took a prominent part in framing the tariff law that bears his name (see TARIFF). In 1914 he was elected to the Senate for the term 1915-1921.

UNEMPLOYMENT. In all countries, at all times, a certain proportion of laborers—skilled and unskilled—are out of work. The term *unemployment* is applied in economics to this industrial condition. The unemployed may be divided into two general classes—those who are out of work because of conditions beyond their control, and those indolent men who will not work as long as they can obtain a living by their wits. This article considers only the first class.

Causes of Unemployment. The following are some of the chief causes of unemployment:

1. **Change of Season.** Some occupations depend upon the season, such are those of bricklayers, stonemasons, and others included in the building trades. In cold countries these occupations must cease during the winter.

2. **Fluctuation of Demand.** A number of industries have their dull seasons and their busy seasons. Clothing and millinery are good illustrations of industries of this class.

3. **New Inventions and Discoveries.** The introduction of new machinery and of new processes of manufacture always throw a number of workmen out of employment, temporarily, but men thrown out in this way are usually given employment in some other occupation, if they are willing to make the change.

4. **Change of Location.** Occasionally an industry is removed to a distant locality, and some of the workmen are unable or unwilling to remove to the new location and are left without employment. This condition is frequently brought about by combining firms into a trust. For economic reasons the trust usually closes some of the plants.

5. **Congestion of Labor.** Every year thousands of men and women flock to the great cities for the purpose, as they suppose, of bettering their condition. To these other thousands are added by immigration. Usually there are more laborers in large cities than the regular industries can profitably employ.

6. **Industrial Depression.** During periods of prosperity there is a tendency to produce commodities in excess of the demand for them. In course of time the market becomes overstocked, manufacturers have their capital invested in products that they cannot sell, and production is greatly restricted or entirely suspended. When this occurs, large numbers of workmen are without jobs.

7. **Labor Troubles.** Disagreements between employers and employes over wages and other conditions all too frequently lead to strikes and lockouts, causing large numbers to be thrown out of employment for indefinite periods. In these contests both parties generally lose. See Labor Organizations; Strike.

Means of Prevention. From the nature of the problem statistics of unemployment are incomplete, and consequently are of little value. Much time and effort have been expended in trying to solve the problem, yet it is found that the unemployed in the United States include from 12.5 to 27 per cent of the laboring population. This means that at all times there are several million idle workmen. The following measures have been taken or suggested to remedy this condition:

1. **Labor Bureaus.** The establishing of labor bureaus, which register applications for positions and calls for workmen, has been found an excellent means of bringing the workman and the employer together. The United States Department of Labor through branch bureaus located in different parts of the country is serving as a general clearing house for the unemployed, and its services are very beneficial. A number of states also have established free employment bureaus. In addition to these there are many private bureaus that operate on a commission basis.

2. **Publishing Labor Conditions.** It is the opinion of those who have devoted much study to this problem that regular publication by responsible authorities, state or national, of the condition of the labor market in great cities might check the influx of laborers to these centers.

3. **Shorter Days.** Some recommend the adopting of a shorter day, so it would require more workmen to keep production up to the standard. However, the results of this experiment everywhere it has been tried have not shown the measure to be effective.

4. **Restriction of Immigration.** A large proportion of immigrants remain in the ports where they land, the balance go to other cities or to mining regions, where there is usually a congestion of labor.

5. **Agricultural Colonies.** With rare exceptions there is a scarcity of labor in the country. Could many of these workmen who are out of employment be induced to remove

to farms, they might become prosperous, but special inducements are necessary to lead them to make this change. States having large areas of vacant land, philanthropic organizations and the United States government are interested in establishing farm colonies.

UNGAVA, *ung gah' va,* formerly a territory of Canada, but united to Quebec in 1912, the year in which so many provincial boundaries in the Dominion were changed. In the same year the province of Quebec formed a new territory under its jurisdiction, called the Territory of New Quebec. It includes Ungava and Labrador, and has an area of 351,780 square miles. The population is about 14,300; of these 8,800 are white people, 3,500 are Indians and 2,000 are Eskimos. See LABRADOR.

UNGULA' TES, an order of mammals including the buffalo, camel, cow, deer, elephant, pig, goat, sheep, and related animals, generally characterized by strong molar teeth for the chewing of vegetable food; horny hoofs, which enclose their toes; and, in many cases, by the ability to run with speed. Ungulates are the only animals that have horns. They are important in human economy, funishing man with food, clothing, working power and means of transportation.

Related Articles. Consult the following titles for additional information:

Antelope	Elephant	Ibex
Boar	Giraffe	Peccary
Camel	Goat	Rhinoceros
Cattle	Hippopotamus	Sheep
Deer	Horse	Tapir

U'NICORN, a fabulous animal of Greek and Roman mythology, similar to a horse but having a horn on its forehead. With the lion it forms a part of the British coat of arms.

UNIFORMS, MILITARY AND NAVAL. A uniform is a distinguishing dress worn by members of armies, navies and other organizations. This article treats of military and naval uniforms only. Since the beginning of the present century, the military uniforms of the leading nations have been radically changed. The display dress of former times has been replaced by one designed especially for comfort and service. The change was inaugurated by Great Britain, because at the beginning of the South African War the uniforms of the British soldiers were too heavy for service in a hot country.

The old uniforms were replaced by those of khaki. The color adopted was the same as that of the khaki-colored uniforms used in India. The cut was loose; the coat had patch pockets and the trousers were tight at the knee. The lower leg was protected by boots, leather leggings, or strips of strong woolen material called *puttees,* which were wound around the leg. This type of uniform proved to be so comfortable and serviceable that it has been practically copied by all the leading nations, each making such modifications in color and minor particulars as would distinguish its uniform from that of other nations. The service uniform of the German army was a greenish-gray, and that of Italy is a brownish-gray. The French, however, still retain the blue and red color scheme of former days.

United States. The service dress of the United States army is of khaki; the cut is similar to that of the British uniform described above. A cap of the same material and color is worn, but when the soldier is in battle this cap is replaced by a metal helmet.

Branch and Line Badges. Each branch is distinguished by a badge. Members of the general staff wear the United States coat of arms of gold and enamel on a silver star. A shield marks the department of the adjutant-general, and the inspector-general is designated by a crossed sword and fasces with a wreath. A sword and key crossed on a wheel and surmounted by a spread eagle is the badge of the quartermaster-general. Members of the medical staff wear the caduceus, or wand of mercury; engineers are indicated by a metal castle, and members of the signal corps by two crossed signal flags and a torch in gold and silver. The badges for officers are as follows: infantry, two crossed rifles with the number of the regiment above the intersection; for cavalry, two crossed sabers, and for artillery, two crossed guns.

Distinctions in Rank. A brigadier-general is designated by one star on the shoulder straps, and a major-general by two stars. On shoulder knot and shoulder loop the general wears a coat of arms between two stars; lieutenant-general, one large star between two small ones; major-general, two silver stars; brigadier-general, one silver star; colonel, a silver eagle; lieutenant-colonel, a silver leaf; major, a gold leaf; captain, two silver bars; first lieutenant, one silver bar; second lieutenant, one gold bar. The rank of noncommissioned officers is indicated by

chevrons on the coat. All officers, without distinction of rank, wear the letters *U. S.* in Gothic design on the collar.

Gold chevrons on the lower part of the sleeve of soldiers returning from the World War indicated the length of service abroad, there being one chevron for every six months of service.

The Navy. The uniforms worn in the United States navy may be considered typical of those in other navies, since naval uniforms are similar throughout the world. Three uniforms—dress, undress and service—are furnished to every member of the navy. The dress uniform consists of a double-breasted blue broadcloth coat with a high collar and gilt buttons; blue trousers with a strip of gold lace along the seam; epaulets, hat and sword. The service uniform includes a blue or white blouse, with white braid. This or the undress uniform is worn during hot weather and in the tropics.

Officers and cadets wear on the cap a silver shield surmounted by a spread eagle, the design being mounted on two gold anchors crossed. Rank is indicated by special emblems on collar, epaulet and shoulder strap. An admiral wears on the sleeve two strips of two-inch gold lace with a one-inch strip between; a rear-admiral wears a half-inch strip of gold lace above a two-inch strip; captain, four half-inch strips; commander, three strips; lieutenant-commander, two half-inch strips with a quarter-inch strip between; lieutenant, two half-inch strips; lieutenant (junior grade) one half-inch strip with one quarter-inch strip above; ensign, one half-inch strip; cadet, one quarter-inch strip.

UNION, Act of, an act of the British Parliament in 1841 for uniting Upper and Lower Canada. It was the result of the Earl of Durham's famous *Report on the Affairs of British North America,* and was favored at the time by the legislatures of both Upper and Lower Canada. Under the Act of Union, Canada was governed by a legislative council of not more than twenty members, appointed by the Crown, and a legislative assembly in which the provinces had equal representation. It was never entirely satisfactory in its operation, however, and was succeeded, in 1867, by the organization of the Dominion of Canada.

UNION OF SOUTH AFRICA, a self-governing state of the British Empire, widely known for its mineral wealth and consisting of the provinces of the Cape of Good Hope, Natal, Orange Free State and the Transvaal. It was established by an act of Parliament in 1909. It has an area of 473,075 squares miles, and a population of about 6,000,000, one-fifth of whom are whites, chiefly of Dutch and English descent.

Agriculture. The country consists of plateaus and rolling plains, or *veldts,* which are almost treeless and afford excellent pasturage. The climate is temperate, and the soil is fertile. Wherever there is sufficient rainfall excellent crops can be grown, but stock raising is the chief agricultural occupation. Millions of sheep are pastured on the prairies, and wool is the staple of wealth among the farmers. Angora goats and cattle are also raised in large numbers, and ostrich farming has become an important industry. Sugar cane and tea are successfully cultivated in the warmest regions. Wheat and fruits are important products of the Cape Province. It is claimed that the Union of South Africa has such a variety of climate as to admit of the successful cultivation of all crops within its borders.

Mineral Resources. The mines constitute the greatest source of wealth, and the discovery of the vast deposits of gold and rich diamond fields brought the country into universal notice. The principal gold mines are in the Witwatersrand in the Transvaal, and in 1918 the output of these mines exceeded $188,615,000 in value. The most valuable diamond mines are around Kimberley, and the yearly output of diamonds amounts to about $50,000,000. There are valuable copper mines in Namaqualand, and extensive deposits of coal and iron have been discovered in the Cape Province and Natal. Silver, graphite and manganese occur in paying quantities, and marble and other building stone are found.

Transportation and Communication. The roads are fair in the settled districts, and mail carts and other wagons connect large towns off the railways with these lines of transportation. All the important ports of the south and east coast are connected by railway, and these lines are joined to the Cape-to-Cario Railway, extending from Cape Town into the interior of the continent. At the end of 1916 there were 9,419 miles of railways in the South African railway system. There were over 16,000 miles of telegraph line, and

the telephone lines carried over 101,000 miles of wire. The country has over 2,500 post-offices and an efficient mail service.

Government. The government is organized on the same plan as the governments of Canada and Australia. The chief executive is the Governor-General, who is appointed by the Crown. He is aided by an Executive Council of his own selection. The Parliament consists of a Senate of forty members (eight appointive and thirty-two elective) and a House of Assembly of 121 members elected by the people. Each province has its local government, consisting of a lieutenant-governor and a legislative assembly. The courts are guided by Dutch law in settling civil suits, and both Dutch and English languages are used. Both of these languages are taught in the schools.

History. The early history of the provinces is given under their respective titles. Before the South African War there was a constant struggle between the Dutch and English settlers. The war gave the English the ascendency, and the ablest of the Dutch leaders soon joined the English leaders in an effort to establish a permanent government that would be satisfactory to all parties; their efforts resulted in establishing a federated state including the five provinces. Several clashes with the natives have occurred, and soon after the outbreak of the World War the country was threatened with a serious rebellion, but the rebels were defeated and order was restored.

Related Articles. Consult the following titles for additional information:

Cape of Good Hope, Province of the	Natal
Cape Town	Orange Free State
Johannesburg	Pretoria
Kimberley	South African War
	Transvaal, The

UNIONTOWN, PA., the county seat of Fayette County, seventy miles southeast of Pittsburgh, on the Baltimore & Ohio and the Pennsylvania railroads. It is the center of a region rich in coal, iron ore, glass sand and natural gas, and its industrial plants include lumber mills, coke ovens, steel works, foundries, machine shops and glass and other factories. The principal buildings are a hospital, a courthouse and a county home for the poor. Uniontown was settled in 1767, and the borough was incorporated in 1796. Population, 1910, 13,344; in 1917, 21,600 (Federal estimate).

U'NIT, a single thing regarded as an undivided whole. In arithmetic the term is also used to denote the least whole number, *one* or *unity,* represented by the figure 1. In mathematics and physics, a unit is any known determinate quantity, by which any other quantity of the same kind is measured, as a foot, a second, a degree, a square yard (see WEIGHTS AND MEASURES). Below are given the more important special units used in physics.

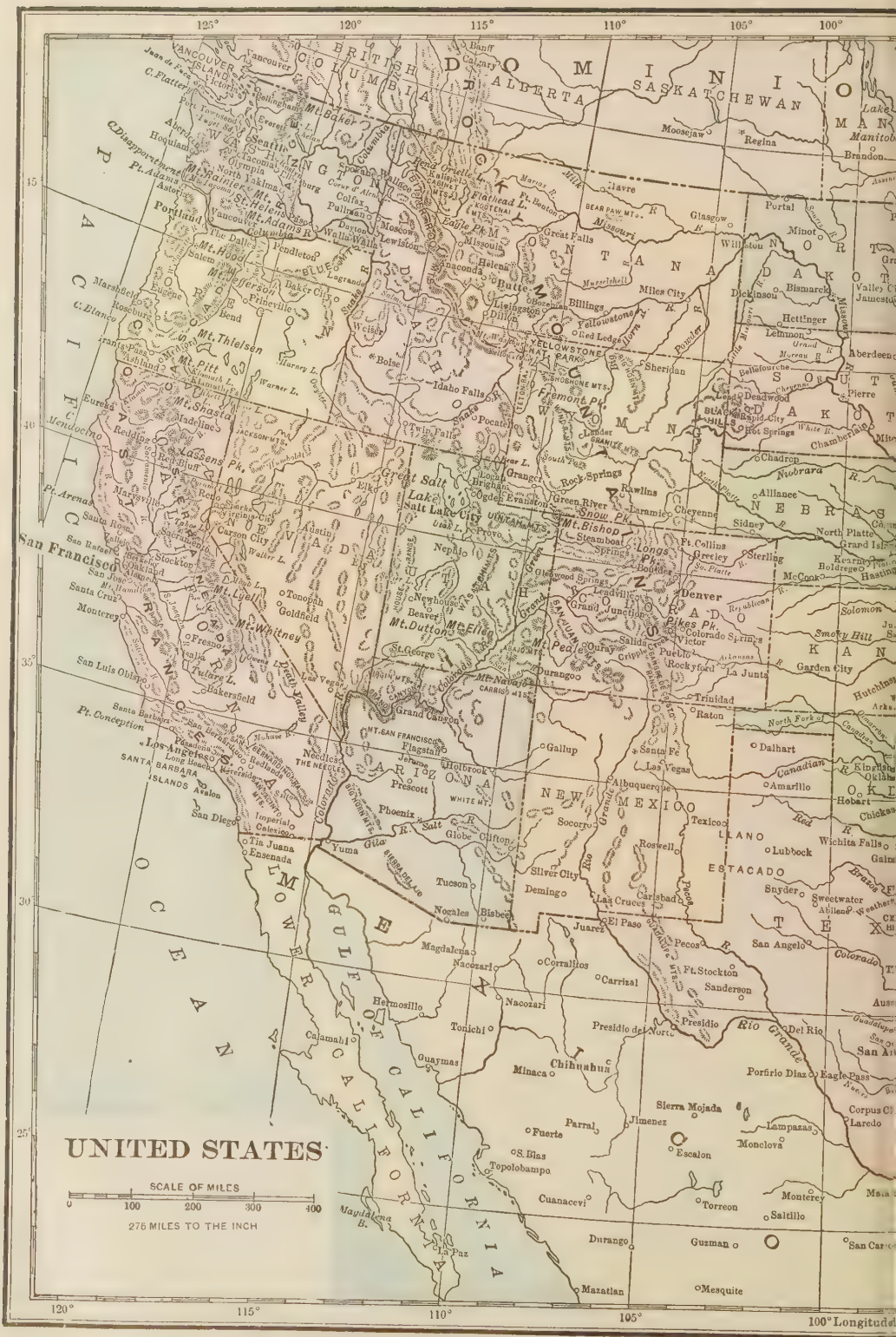
The *unit of specific gravity,* for solids or liquids, is the specific gravity of one cubic foot of distilled water at 62° F.; for air and gases, of one cubic foot of atmospheric air at 62° F. The *unit* of *heat,* or the *thermal unit,* is the quantity of heat required to raise one pound of pure water from a temperature of 39°F. to a temperature of 40° F., or, in the metric system, the amount of heat required to raise a gram of pure water from a temperature of 3.94° C. to 4.94° C.

In electricity the *unit of quantity* is that quantity of electricity, which, with an electromotive force of one volt, will flow through a resistance of 1,000,000 ohms in one second; it is called a *farad.* The *unit of electric current* is a current of one farad a second. The *unit of physical work* is that amount of work which will produce a velocity of one meter per second in a mass weighing one gram, after acting upon it a second of time. The *dynamic unit* is the unit expressing the quantity of force or the amount of work done, as the *footpound.*

In physical calculations the system of units now in general use is that known as the *C. G. S. System,* based upon the metric system of weights and measures, in which the centimeter is the *unit of length,* the gram is the *unit of mass* and the second the *unit of time.* Consequently, the *unit of area* is the square centimeter; the *unit of volume,* the cubic centimeter; the *unit of velocity,* a velocity of one centimeter per second. The *unit of momentum* is the momentum of a gram moving with a unit velocity.

For definitions of units of measurement in other fields of work, see articles on those units, as FOOT; POUND; DOLLAR.

UNITA'RIANS, a religious denomination believing in one God, the Father, and not in a Trinity of Father, Son and Holy Spirit. They accept Christ as a divinely appointed teacher, to be followed, but not worshiped, and regard the Bible as an endeavor of the religion of the spirit to express itself in literature. The Unitarians have no creed; their


UNITED STATES
SCALE OF MILES
0 100 200 300 400
275 MILES TO THE INCH
125°
120°
115°
110°
105°
100°
Longitude
BRITISH COLUMBIA
ALBERTA
SASKATCHEWAN
MANITOBA
DOMINION
WASHINGTON
OREGON
IDAHO
MONTANA
NORTH DAKOTA
SOUTH DAKOTA
NEBRASKA
WYOMING
NEVADA
UTAH
COLORADO
KANSAS
CALIFORNIA
ARIZONA
NEW MEXICO
OKLAHOMA
TEXAS
PACIFIC OCEAN
GULF OF CALIFORNIA
LOWER CALIFORNIA
Vancouver
Victoria
Seattle
Portland
Spokane
Salem
Eugene
Astoria
Boise
Idaho Falls
Pocatello
Helena
Butte
Great Falls
Missoula
Billings
Miles City
Bismarck
Minot
Williston
Moosejaw
Regina
Brandon
Winnipeg
Calgary
Banff
Edmonton
Lethbridge
Medicine Hat
Swift Current
Yellowstone Park
Old Faithful
Mammoth Springs
Cody
Sheridan
Gillette
Rapid City
Deadwood
Pierre
Aberdeen
Jamestown
Valley City
Grand Forks
Devils Lake
Dickinson
Hettinger
Lemmon
Chadron
Alliance
Sidney
North Platte
Grand Island
Hastings
Kearney
McCook
Omaha
Lincoln
Sioux City
Yankton
Sioux Falls
Huron
Watertown
Brookings
Fargo
Grand Forks
Winnipeg
Brandon
Portage la Prairie
Selkirk
Lake Manitoba
Lake Winnipeg
Lake of the Woods
Rainy Lake
Port Arthur
Fort William
Duluth
Minneapolis
St. Paul
Rochester
Mankato
Worthington
Sioux Falls
Yankton
Omaha
Lincoln
Hastings
Grand Island
North Platte
Sterling
Greeley
Cheyenne
Laramie
Rawlins
Rock Springs
Green River
Evanston
Ogden
Salt Lake City
Provo
Great Salt Lake
Utah L.
Sevier L.
Carson L.
Walker L.
Mono L.
Owens L.
Searles L.
Mohave
Death Valley
Salton
Imperial
Colexico
Calexico
San Diego
Los Angeles
Pasadena
San Bernardino
Redlands
Riverside
Santa Monica
Long Beach
Santa Barbara
Channel Islands
Avalon
San Francisco
Oakland
Berkeley
San Jose
Santa Cruz
Monterey
Salinas
Fresno
Tulare L.
Visalia
Bakersfield
San Luis Obispo
Pt. Conception
Pt. Arena
Mendocino
Eureka
Redding
Red Bluff
Chico
Marysville
Sacramento
Stockton
Modesto
Merced
Madera
Lassens Pk.
Mt. Shasta
Mt. Thielsen
Mt. Pitt
Mt. Jefferson
Mt. Hood
Mt. Adams
Mt. St. Helens
Mt. Rainier
Mt. Baker
Mt. Whitney
Mt. Lyell
Mt. Dana
Mt. Tyndall
Mt. Williamson
Mt. Langley
Mt. Shasta
Mt. Dutton
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Pikes Pk.
Longs Pk.
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Granite Pk.
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Little Rocky Mts.
Judith Mts.
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Wallowa Mts.
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Coast Ranges
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Goose L.
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Presidio del Norte
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ATLANTIC OCEAN
Hammond's 8 x 11 Map of the United States
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West 95° from Greenwich 90° 85° 80° 75° 11

faith may be summed up in the words of James Freeman Clarke, "the fatherhood of God, the brotherhood of man, the leadership of Jesus, salvation by character and the progress of mankind upward and onward forever." In 1819, Dr. Channing of Boston led a movement which turned 150 of the New England churches to Unitarianism. See CHANNING, WILLIAM ELLERY.

UNITED DAUGHTERS OF THE CONFEDERACY. See CONFEDERACY, UNITED DAUGHTERS OF THE.

UNITED KINGDOM, THE, officially THE UNITED KINGDOM OF GREAT BRITAIN AND IRELAND, a term formally adopted in 1801 to indicate the political union of England, Ireland, Scotland and Wales. See GREAT BRITAIN.

UNITED PROVINCES OF AGRA AND OUDH, *oud,* a province of British India, formerly known as NORTHWESTERN PROVINCES AND OUDH, occupying the Upper Ganges valley. It has an area of 107,267 square miles, of which 83,109 belong to Oudh and 24,158 to Agra. The northern part is in the mountainous region of the Himalaya, but the rest of the province is a low, fertile plain watered by the Ganges, the Jumna and a number of other streams. In the southern part the rainfall is uncertain, and irrigation is necessary. About one-fifth of the cultivated land in the province is under irrigation. The province includes one of the most productive agricultural regions of India; the chief crops are wheat, rice, barley, millet and sugar cane. Other products of importance are cotton, maize, indigo and opium.

Modern cotton mills are in operation at Cawnpore, but in general, Oriental methods of manufacture are employed. The province is well supplied with railroads, and the Ganges affords good water transportation. The exports consist chiefly of raw cotton, wheat, hides, sugar, oil seeds, indigo and opium. Coal, salt, cotton goods and metals are imported.

In 1911, the date of the last government census, the population was 12,558,000. About one-sixth of the inhabitants are Mohammedans, and about 250,000 are Christians; the remainder are Buddhists. The chief executive is a lieutenant-governor, appointed by the Governor-General of India. There is a legislative council of fifty members. The province is divided into districts and municipalities for local administration.

UNITED STATES COAST GUARD. See COAST GUARD.

UNITED STATES COURTS. See COURTS, subhead *United States Courts.*

UNITED STATES INDIAN TRAINING AND INDUSTRIAL SCHOOL, at one time the largest and most successful school for American Indians, was founded at Carlisle, Pa., in 1879. Its central purpose was to provide a school where such mental, moral and manual training could be secured by Indian boys and girls that they would be led to appreciate the value of modern civilization and desire to attain to it. Besides the training in the common manual trades and elementary instruction in the common branches of study, an "outing" system was provided. Under this plan, as many as possible of the students were sent out into the homes of white people as servants, to study and live the life of the Caucasian. After a remarkably successful career of forty years, during which it educated thousands of Indian youth, many of whom returned to their people and became teachers, the school was abandoned in 1918, because the opening of numerous similar schools near Indian reservations made its continuance unnecessary.

UNITED STATES OF AMERICA, one of the world's great powers, the oldest of the great republics, although one of the youngest nations. It occupies the central part of North America, having Canada for its northern neighbor and Mexico on its southwestern border. The tides of the Atlantic wash its eastern shores, the Gulf of Mexico its southern, while the western look out upon the broad Pacific, aptly styled the "American Ocean." The greatest extent from east to west is 3,100 miles, and from north to south 1,700 miles. The area of continental United States is 3,026,789 square miles, of which 43,000 square miles are water. But to this area the outlying possessions add about 716,700 square miles, making the total area of the territory under control of the United States government 3,743,478 square miles. The British Empire and China are larger than the United States, including its outlying possessions, and

Brazil is larger than continental United States. The British Empire and China have each about four times the population of the United States, but Brazil has only about one-fourth as many inhabitants.

Geographic Advantages. Human development has always been influenced by geographic conditions, chief among which are climate, soil and relative location. When these conditions are applied to the United States, it is seen that it is more highly favored geographically than most other nations. The country lies wholly within the north temperate zone, which has been the home of the great civilizations of history; it lies between two great oceans, almost equally distant from the other great land masses of the earth, with which it has easy communication; mountain and valley, hill and plain are so interspersed as to adapt the country as a whole to all lines of industry; while the great interior, with its broad plains, fertile soil and abundant rainfall is the richest agricultural region of the world. Great rivers furnish natural waterways leading far into the interior and affording inexpensive transportation, while thousands of mountain streams turn the wheels of industry. The ease with which railways can be constructed has caused all parts of the country to be bound together with bands of steel, and commodious harbors on the seaboards accommodate ships laden with the products of all climes. These conditions, combined with the energy, intelligence and genius of the American people, have placed the United States in the foremost position among the great nations of the world.

Boundaries and Coastal Features. West of the 95th meridian the northern boundary is formed by the 49th parallel of north latitude until the Pacific coast is reached; then it extends southward to the Strait of Juan de Fuca, thus placing Vancouver Island within the Dominion of Canada. East of the 95th meridian the northern boundary is very irregular. That portion of it between the meridian and Lake Superior is formed by the Rainy and Pigeon rivers. Through the Great Lakes the boundary line follows the deepest channel, which divides Lakes Huron, Erie and Ontario nearly equally between the two nations, but gives the larger part of Lake Superior to the United States. Following Lake Ontario the boundary is formed for a short distance by the St. Lawrence River, then across New York and Vermont by the 45th parallel; thence it follows the Height of Land in an irregular course to the northeast, until the northerly point of Maine is reached. From there the boundary is completed by the Saint Johns River, a short, arbitrary line and the Saint Croix River. A portion of the southern boundary is formed by the Rio Grande.

The northern boundary affords the finest example in the world of international faith. By mutual agreement between the United States and Great Britain there has never been a fortification erected along its entire length nor has either nation ever placed a warship or even a gunboat on the Great Lakes. The integrity of the boundary has never been violated.

The prominent projections are, on the Atlantic coast, Cape Cod, Cape Hatteras and the peninsula of Florida; on the Gulf coast, Cape San Blas and the delta of the Mississippi, and on the Pacific coast, Cape Mendocino. The important coast waters are, on the Atlantic, Massachusetts Bay, Long Island Sound, Delaware Bay, Chesapeake Bay, Albemarle Sound and Pamlico Sound; on the Gulf, Apalachee Bay and Mobile Bay, and on the Pacific, San Francisco Bay and Puget Sound, Delaware Bay, Chesapeake Bay, Althe Great Lakes, is 12,101 miles. The Atlantic coast is 6,017 miles; the Gulf, 3,551, and the Pacific, 2,533.

The chief islands on the Atlantic coast are Nantucket, Martha's Vineyard, Long, Manhattan, Staten, Roanoke and Florida Keys; in the Gulf of Mexico, Tortugas, Saint George's, Santa Rosa, the Chandeleur group, Galveston and Padre; on the Pacific, Santa Catalina, the Santa Barbara group and San Juan.

Surface and Drainage

The vast extent of territory embraced within the United States contains a great variety of surface, but this is naturally divided into five regions—the Atlantic Slope, the Appalachian Highlands, the Central Plain, the Rocky Mountain Highlands and the Pacific Slope.

The Atlantic Slope. This region embraces a narrow strip of land extending from the northeastern corner of Maine to Florida. In the northern part it is extremely narrow, and the slope is steep. The irregularity of the coast line produces numerous good harbors, upon which some of the largest cities of the country are located. Chief among these indentations are Boston Bay, New York

RELIEF MAP OF THE UNITED STATES

Bay, Delaware Bay and Chesapeake Bay. South of Long Island the coast region consists of a tract of level land, varying from 75 to 300 miles in width, known as the Atlantic coastal plain. Along the shore and for a short distance inland the surface is low, level and, in many places, marshy. The land then rises gradually until it meets the Piedmont region, or foothills of the Appalachians, which consist of the remains of an old, worn-down mountain system, formed previous to the present Appalachian system. Where the plain joins the Piedmont region, there is a marked elevation, known as the Fall Line because the rivers reaching the Atlantic fall over this uplift, producing numerous rapids and affording excellent water power.

Appalachian Highlands. This region constitutes the eastern continental barrier and extends from the Gulf of Saint Lawrence to within about 300 miles of the Gulf of Mexico. The trend of the mountains is from the northeast to the southwest. The region consists of a low plateau, from 1,500 to 3,000 feet in altitude, upon which are a number of parallel ranges of mountains. The northern part of the plateau is quite broken, and the mountains are disconnected, forming separate ranges or groups, as the Green Mountains, the White Mountains and the Adirondacks. South of this division, however, the plateau is continuous and is surmounted by a number of parallel ranges of low mountains, such as the Blue Ridge, the Alleghanies and others. The highest peaks in these highlands are Mount Washington (6,293 feet), in the White Mountains, and Mount Mitchell (6,711 feet), near the southern extremity of the plateau. On their western slope these highlands descend by a series of foothills to the prairie region in the central plain.

Central Plain. This occupies the vast interior of the country, and embraces that portion of the great central plain of North America included within the boundaries of the United States. It is naturally divided into three regions, the great plain, the lake region and the gulf region.

The Great Plain. East of the Mississippi, this plain occupies that portion of the interior between the Ohio River and the lake region. Here it descends from the western foothills of the Appalachians to the broad, level prairies which compose most of the states bordering on the Mississippi. This stretch of level or slightly rolling land continues westward, until it rises in gradual swells to meet the foothills of the Rocky Mountain highlands, where it attains an elevation of from 3,000 to 6,000 feet. With the exception of the Black Hills in South Dakota and Wyoming, the Ozark Plateau, which extends eastward from the southern boundary of Kansas, crossing Arkansas, the southern part of Missouri and the southern part of Illinois, this level tract of land extends southward into Texas and westward until it joins the Staked Plains in the northwestern part of that state. With the exception of the forests in Northern Minnesota and in the Ozark Region, this entire portion of the country is nearly treeless. Timber is found only along streams and in regions where trees have been planted by settlers. These vast tracts of level, treeless land are generally known as *prairies*. Their deep, rich soil, abundant rainfall and salubrious climate make the prairies the most valuable agricultural region in the world.

Lake Region. The Lake region constitutes that portion of the United States which drains into the Great Lakes, and thence through the Saint Lawrence River into the Atlantic. The Height of Land, forming the southern boundary of this region, is nearly parallel with the southern shores of Lakes Ontario and Erie. It extends across the northern part of Ohio, Indiana and Illinois, thence turns northward, to include the eastern portion of Wisconsin, all of Michigan and the northwestern part of Minnesota. The region within the United States is not large. It is either level or rolling, nowhere having high altitudes and much of it was formerly heavily timbered, but the lumbering interests have greatly reduced the forest area. The most distinctive feature of this region is the presence of the great inland seas, which lie wholly or partially within its boundaries.

Gulf Region. The Gulf region includes the lowlands bordering on the Gulf of Mexico and extending inland until they meet the foothills of the Appalachian Highlands. In the valley of the Mississippi, this plain extends northward to the Ohio River, and west of the Mississippi it extends northward to the Ozark Mountains. Along the coast the land is low, level and swampy, but with the exception of that immediately in the vicinity of the Mississippi River, it rises gradually to-

ward the interior, until it reaches a height of 300 to 500 feet. The plain includes all of the southern and southeastern parts of Texas, and in that state it is from 150 to 200 miles in width.

Rocky Mountain Highlands. This region occupies nearly one-third of the area of the country, and consists of a great plateau, upon which rise several ranges of mountains. This plateau reaches its greatest height and width in Colorado and Wyoming. Here it is nearly 1,000 miles wide and from 7,000 to 8,000 feet in altitude. On its eastern slope it rises from the plain in a series of elevations, until the Rocky Mountains, which form its eastern boundary, are reached. These extend entirely across the country and contain numerous peaks, with altitudes of 14,000 feet or more. The western border of the plateau is formed by the Cascade Mountains, in the north, and their southern continuation, the Sierra Nevadas. These mountains contain some peaks higher than those found in the Rocky Mountains. Their eastern slope, since they rise from the plateau, is less abrupt than the western, which descends to the valley between them and the low ranges.

Between these mountain barriers, the surface of the great plateau is widely diversified by lesser ranges, extending in various directions. These ranges divide this vast inland region into three well-marked divisions, the Columbia Plateau, in the north; the Great Basin, and the Colorado Plateau. The first occupies the mountain regions of Washington, Oregon and Idaho. The Great Basin includes nearly all Nevada and Utah and a small portion of Oregon and California; it is entirely surrounded by mountains, and its rivers find no outlet, hence it contains a number of salt lakes and marshes, the most noted among which is Great Salt Lake. South of this, and occupying a small part of Nevada, nearly all of Colorado, a part of Utah, most of Arizona and New Mexico and the southern part of California, is the Colorado Plateau, marked by many high peaks and the deep gorges of its streams. Within the Rocky Mountain Highlands are located several of the great national parks.

The Pacific Slope. Between the Sierra Nevada and Cascade mountains and the coast are low parallel ranges, known as the Coast Ranges. West of these is the narrow strip of land bordering upon the ocean. This low land is much narrower than that bordering upon the Atlantic, but between the mountains are several valleys noted for their fertility. Chief among these are the valleys of the San Joaquin and Sacramento rivers, the region around San Francisco Bay and that around Puget Sound. Farther inland, in the southeastern part of California, is Death Valley, a remarkable depression, 300 feet below sea level.

Rivers. The United States is drained by five river systems—the Lake system, the Atlantic system, the Gulf system, the Pacific system and the Great Basin system. The portion of the country drained by the Lake system is comparatively small, and the streams flowing into it are generally short and of little importance, though the Saint Lawrence River, forming the outlet of this drainage area, is one of the most important streams in North America.

Owing to the position of the Appalachian Highlands, the rivers of the Atlantic system are short and many of them are rapid. However, the largest of these streams enter the ocean by broad estuaries, which afford excellent harbors, and some of them, particularly the Hudson, the Delaware and the Potomac, cut their way through the mountains, forming deep gorges remarkable for their beautiful scenery. The most important of these rivers, in order, beginning at the north, are the Penobscot, the Kennebec, the Merrimac, the Connecticut, the Hudson, the Delaware, the Potomac, the James, the Pedee, the Santee, the Savannah and the Altamaha. Most of these streams afford excellent water power and the banks of the Merrimac and many others are lined with factories.

The rivers of the Gulf system include the Appalachicola, the Alabama, the Pearl, the Sabine, the Trinity, the Brazos, the Colorado of Texas, the Nueces, the Rio Grande and the Mississippi, which drains by far the largest part of the country.

The rivers of the Pacific system are few, and with the exception of the Columbia, draining the northwestern part of the country, and the Colorado, flowing into the Gulf of California, they are all short and small. Proceeding southward from the Columbia, those worthy of mention are the Klamath, the Sacramento, the San Joaquin and the Salinas. The Colorado, formed by the junction of the Green and the Grand in Utah, drains a portion of the plateau between the Rocky and the Sierra Nevada mountains.

This stream is remarkable for the gorges which it has formed in the middle and lower parts of its course.

The Great Basin system consists of a number of small streams which flow into Great Salt Lake and a few smaller lakes, or those which lose themselves in salt marshes in the desert. The Humboldt is the only important river that loses itself in the sands.

Lakes. Fully one-half of the area of lakes Superior, Huron, Erie and Ontario belongs to the United States, and all of Lake Michigan is within her boundaries. In addition to these great bodies of water, the northern part of the Appalachian Highlands contains many lakes noted for their clear waters and beautiful scenery. Chief among these is Moosehead, in Maine; Winnepesaukee, in New Hampshire, and Champlain, between Vermont and New York. The northern parts of Michigan, Wisconsin and Minnesota are also studded with lakes, and in the Rocky Mountain region are found numerous lakes, some of which, like Lake Tahoe, are noted for their high altitude, others for their great depth, abundance of fish and beautiful surroundings. The Great Basin has Great Salt Lake and numerous other smaller bodies of salt water.

Scenery. For variety, beauty and grandeur, the scenery of the United States is unequaled by that of any other country. The Appalachian Highlands are noted for their mountain lakes, sparkling streams and deep gorges, through which rivers find their way to the sea. Notable among the last are the Crawford Notch, in the White Mountains; the Palisades of the Hudson, and the Delaware Water Gap. The central plain presents to view vast areas of fertile fields. The expanse of fresh water afforded by the Great Lakes is nowhere equaled and is approached only by the great lakes in the equatorial regions of Africa. The only cataract comparable with Niagara is Victoria Falls, on the Zambezi, while the Shoshone Falls, Yosemite Falls, the Falls of the Yellowstone and many others in the Rocky Mountain region are unsurpassed in beauty. The extent and grandeur of mountain scenery found in the Rocky Mountains exceed that of any other single country; the Royal Gorge, Yosemite Valley and the canyons of the Colorado and Yellowstone are features of unusual interest, and the geysers and hot springs of Yellowstone National Park have caused that region to be termed the "World's Wonderland."

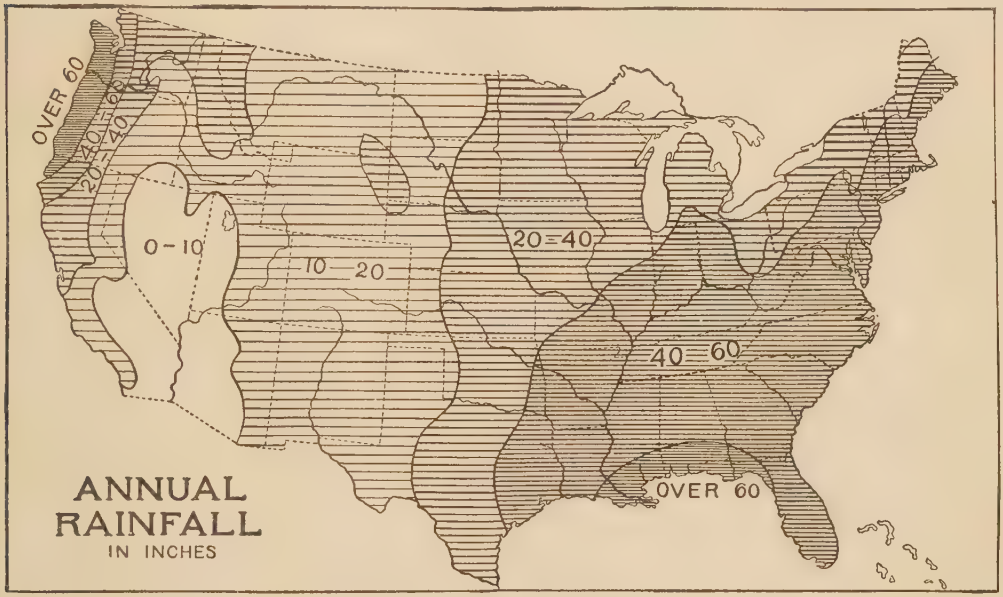
Climate

Within the boundaries of the United States may be found every range of temperate climate, and the extreme southern and southwestern sections are semitropical. This great diversity of climate is due to the wide range of latitude (24°), the position and extent of the mountain systems and differences in altitude.

Temperature. On the northern boundary, the average temperature for January is 20°, and for July, 60°. The contrast between the winter temperature on the Pacific and Atlantic coasts in the northern part of the country is very marked, the mean temperature on the Pacific coast being 41°, and on the Atlantic coast, 14°. Toward the south the average temperature rises, and it also becomes more nearly equal at the eastern and western extremities; at the 30th parallel of latitude the difference between the average temperature of the two regions for January is only 2°, and for July, only 9°, while at the extreme southern boundary the January difference is 3°, and the July difference, but 1°. The central plain is open to the passage of air currents with little or no obstruction; consequently alternating north and south winds sweep over this region, causing sudden and marked changes in temperature. The northern part of the Appalachian Highlands has a cool temperate climate. The winters are usually long and severe, and in New England, New York, some parts of Pennsylvania and northern Ohio, there is a heavy fall of snow. Toward the south the mean temperature rises, and south of Pennsylvania little snow falls, except on the highest mountains. Near the Gulf the temperature seldom falls below freezing point, and the Gulf states, with South Carolina and Georgia, verge upon a subtropical climate. The Rocky Mountain region is cooler than other regions in the same latitude, because of its high altitude. The northern part of this region, as well as the northern portion of the central plain, is subject to intensely cold waves during winter, the thermometer occasionally falling as low as 40° below zero; yet, owing to the dryness of the atmosphere, these extremes produce little discomfort. The Pacific coast has a mild climate throughout the year, with a remarkably equable temperature. At sea level the thermometer

seldom falls below freezing point, even in the northwestern part of the country, and during summer it seldom rises above 80° or 85°. In the southern part of California, the temperature in summer may be higher than this, though hot waves, even there, last but a short time.

Rainfall. The position of the mountains causes a very unequal distribution of rain. In general, all that portion of the country



east of the 100th meridian, crossing the middle of North and South Dakota and Nebraska, has sufficient rainfall for agriculture. In most of this region the annual precipitation varies from 40 to 60 inches, which is evenly distributed throughout the year, making this region well suited to agriculture.

A small region in the eastern part of North Carolina, and another area north of the Gulf of Mexico, have over 60 inches. The northern half of Illinois, Wisconsin, Minnesota, Iowa, most of Kansas, Missouri, Oklahoma and the eastern half of Texas have from 20 to 40 inches of rain, which assures crops; but west of this region the annual precipitation varies from 10 to 20 inches, and agriculture can be successfully prosecuted only by irrigation. However, large areas are well adapted to grazing, since there is sufficient moisture to produce a good growth of grass. The great plateau between the mountains is arid, and the southern half of it, including nearly all of Nevada, the western part of Utah, the western part of Arizona and the southeastern part of California, is practically rainless. This is because the winds are robbed of their moisture as they pass inland from the Sierras. The moisture brought by the winds from the Pacific is precipitated on the western slopes of these mountains. The valleys between them and the coast ranges are well watered, and along the coast through Washington, Oregon and the northern part of California, there is a region which receives over 60 inches of rain during the year.

Mineral Resources

The minerals of the United States constitute one of its chief sources of wealth, and in extent and variety they exceed those of any other country. With the exception of some coal and petroleum, most of the valuable minerals are found in the mountainous regions, and there the mining industry is most fully developed. The important mineral fuels are coal, petroleum and natural gas; the chief metals are iron, gold, silver, copper, lead, zinc and quicksilver.

Coal. The most extensive coal measures are found in the central part of the Appalachian highlands, including Pennsylvania and West Virginia and extending westward through the southern part of Ohio, Indiana and Illinois. There are also extensive coal measures in Missouri and Iowa, and areas

of lesser extent occur in North Dakota, Montana, Wyoming, Colorado, Utah and New Mexico. There are also valuable coal measures in Alaska. In all, the area of coal measures is almost 300,000 square miles. By far the greater portion of this area contains bituminous coal, but the anthracite variety is confined within the boundaries of Pennsylvania. The United States produces more coal than any other country, the output being about one-third the entire output for the world. In 1916 it was 526,873,371 tons.

Petroleum. Petroleum ranks next to coal in importance as a mineral fuel, and the oil industry is becoming one of the gigantic businesses of the country. The chief fields are found in western Pennsylvania, West Virginia, Ohio, Indiana, Kansas, Colorado, Texas, Oklahoma and the southern part of California. The annual output for the entire country is over 300,000,000 barrels, which exceeds the quantity produced by any other country.

Natural Gas. Natural gas occurs in usable quantities in Pennsylvania, Ohio, Indiana and Kentucky, and in smaller quantities it is found in a number of other states. It is of great advantage, since it furnishes the cheapest and most convenient fuel, especially for many manufacturing purposes, such as smelting iron and steel and manufacturing glass. Unfortunately much of this gas has been wasted.

Iron. Iron ranks first in value and importance among the metals produced within the country. The great deposits of ore are in Michigan and Minnesota, around Lake Superior; in eastern New York; in Pennsylvania; in Alabama, and Georgia and in southern Missouri, in the Ozark plateau. Deposits of less importance are quite widely distributed, especially in the Rocky Mountain region. Minnesota and Michigan are the leading states in the production of iron ore, and the great centers of iron manufacture are naturally where iron ore and coal can be most cheaply brought together. These are Pennsylvania, Ohio, Illinois, Indiana and Alabama. The United States now leads all other nations in the production of iron and steel, her annual output of pig iron being over 39,000,000 tons.

Gold and Silver. All the important gold and silver mines are located in the Rocky Mountain region, throughout which the ores are quite generally distributed. Present methods of extracting the metals from the ore enable miners to work with profit at quantities of low grade ores that were formerly considered worthless, and this has increased the output of both metals. The annual production of gold, including Alaska, is about $92,000,000, and this amount is exceeded only by the mines in South Africa. The leading states in the production of gold are Colorado, California, Nevada, Utah, South Dakota, Idaho, Arizona and New Mexico, and these also contain the chief silver mines. In production of silver, the country is surpassed only by Mexico.

Other Metals. The United States produces two-thirds of the world's supply of copper. The most important mines are located in Michigan, on the shore of Lake Superior; in Montana, and in Arizona. Lead is mined in Colorado, Idaho, Illinois, Iowa, Kansas, Missouri, Utah and Wisconsin, and the United States produces more than any other country. Lead and copper ores are frequently found combined with silver ore. Zinc is also found in Illinois, Kansas, Missouri, New Jersey and Wisconsin, the Kansas, Missouri, and Wisconsin mines being the largest producers. Quicksilver, is found in California, which produces about all of that substance mined within the country. The United States produces about one-half of the world's supply of aluminum, the reduction works being at Pittsburgh and Niagara Falls.

Building Stones. Limestone is very generally distributed throughout the country and is used for a great many purposes, such as the manufacture of lime and the construction of foundations for buildings and of piers for bridges; the finer varieties, such as those obtained in Indiana, are often used for the exteriors of buildings, or when dressed, for trimmings in buildings constructed of other stone or brick. Granite is found in large quantities in the New England states, particularly Maine, New Hampshire and Vermont; there are also large quarries in Minnesota and other states. This is used extensively for building purposes and for tombstones. Granite is very widely distributed through the mountainous regions, and the Rocky Mountain plateau contains sufficient to supply large demands, whenever transportation facilities will warrant working the quarries. Marble is extensively quarried in Vermont and Georgia, and to some extent it is found in Tennessee and other states. The United

PLANT LIFE OF THE UNITED STATES

See, also, full-page illustration, Plant Life of North America, in article North America.

States produces more marble than any other country. There are large quarries of slate in Vermont, Pennsylvania and several other states. This stone is used for finishing interiors and for roofing. Clays of suitable quality for the manufacture of brick and tile and for pottery are widely distributed.

Miscellaneous Minerals. Gypsum is found in many localities, and salt is obtained from the waters of salt springs and wells, New York and Michigan being the leading states in its production. The manufacture of salt is an important industry in these states.

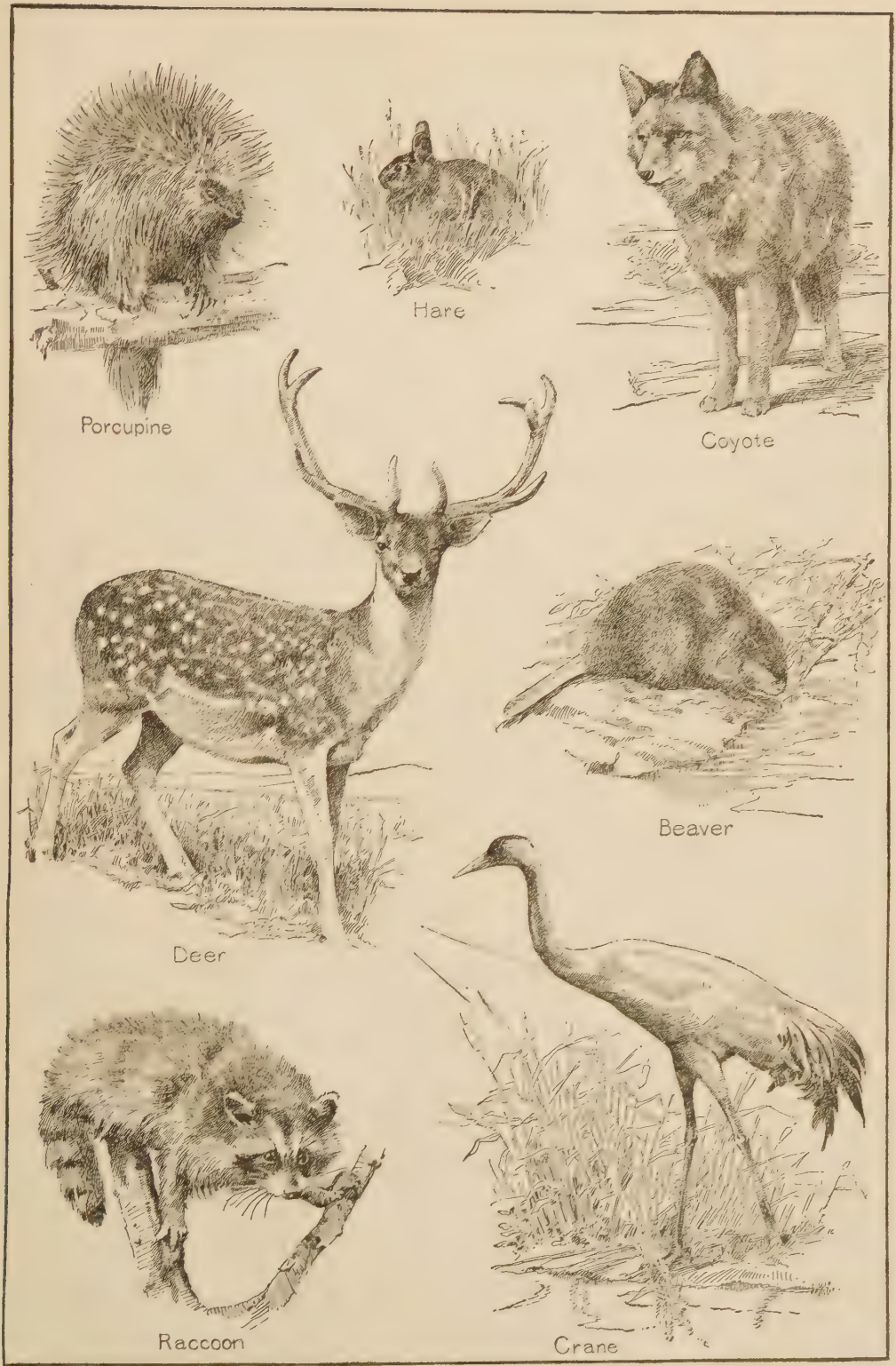
Vegetation. The plant life of the United States is characteristic of that of the temperate regions. Originally fully one-third of the country was covered with forests; but in the Appalachian Highlands and the Great Lake region, many sections have been almost wholly denuded, to supply the demand for lumber. In general, the forest areas include the Appalachian Highlands; the region bordering on the south of the Great Lakes and extending westward to the eastern boundary of the valley of the Red River of the North; the region along the Gulf of Mexico, including the eastern third of Texas and most of Arkansas, and the region occupied by the Cascade and Coast ranges of mountains, extending southward from the Dominion boundary as far as the central part of California.

The Appalachian forests are characterized by a great variety of hard wood, such as oak, maple, ash, beech and birch. There are also many cone-bearing trees, including spruce, hemlock and the white pine, in the north, and the yellow pine and the cypress, in the south. The forests in the lake region formerly had a great abundance of white pine, which was interspersed with some hard woods, and those of the Pacific coast are notable for peculiar species of cone-bearing trees, which attain great size, particularly the Douglas fir, the redwood, the yellow cedar and the sequoia.

In addition to its forests the Appalachian Highland region and Atlantic coast plain have a great variety of smaller plants, many of which are useful, while many are desirable only because of their beautiful flowers. Among the latter are the flowering plants of the mint family, a great number of grasses and a number of shrubs. The great central plain is characterized by the growth of herbaceous plants, most of which belong to the grass family. Many of these grasses are highly nutritious, and previous to the occupation of this region by white men they sustained vast herds of buffalo, which roamed over the prairies. Within the arid region of the Rocky Mountain plateau are found plants peculiar to desert areas. These consist almost wholly of species of sagebrush, bunch grass and buffalo grass, except in the southern portion of the plateau. Here many species of cactus are found, some of them growing to great size. The Pacific slope is characterized by vegetation peculiarly its own, containing a number of species which are tropical or semitropical in nature. Among these are several palms. The southern parts of Texas and Florida have a number of species belonging to the semitropical regions, and the vegetation of Florida very closely resembles that of the West Indies. Two plants discovered in America have become of great economic importance. These are maize, or Indian corn, and tobacco. The cultivated plants are described under their respective titles, and the areas that they occupy are more fully outlined under the subhead *Agriculture,* in the articles treating of the various states.

Animal Life

The native animals of the United States include a large number of species. Among these are 310 species of mammals, 756 species of birds, 816 species of fish, 257 species of reptiles and over 1,000 species of mollusks. Among the larger quadrupeds of the carnivorous order are bears, several varieties of wolf, the puma, or mountain lion, the wildcat, the lynx and the coyote. Among the ruminating animals, various species of deer, the buffalo, the mountain sheep and the pronghorn are the most important. Of these, the buffalo and the mountain sheep are peculiar to North America. Both are now protected in the game preserves of the national parks. There are many species of rodents, of which the beaver is the largest. This animal is also nearly extinct and is found only in the most unfrequented regions of the country. The prairies abound in gophers and prairie dogs, and various species of squirrels frequent nearly all parts of the country. Among the large birds of prey are the eagle, the hawk and various species of owls. The most important water fowl include the Canada goose, the pelican and ducks. Other game birds of



ANIMALS OF THE UNITED STATES

See, also, full-page illustration, Animals of North America, in article North America.

importance are the wild turkey (now nearly extinct), various species of grouse and pigeons. Song birds exist in large numbers and are found in all parts of the country.

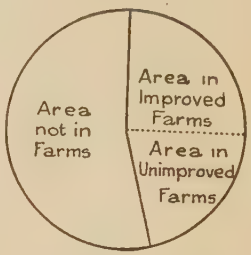
Furs and Fish. It was fish that first drew the French to America, and we might say that it was furs that kept them there. Lured by the profits to be derived from buying furs from the Indians, they explored all of Canada as far west as the head of Lake Superior and much of the northern part of the interior of the United States. From those early days to the present, the fur trade has been a source of income to the inhabitants of the forest and mountainous regions of the United States, as well as to those of Canada. So diligently have the hunters pursued the most valuable fur-bearing animals—the beaver, the otter and the fox—that these have nearly disappeared from the land. But the mink, the muskrat and the skunk are still found, and they furnish the greater part of the fur marketed in the United States. Alaska is valuable for its furs, especially the fur of the seal, but the seal fisheries have been greatly restricted by the government, to prevent the extermination of these valuable animals. Fur farms have been established in some of the islands off the Alaskan coast and in Prince Edward Island, and here the valuable silver and black fox are raised in captivity.

The fisheries of the United States give employment to over 220,000 persons, and the value of the yearly output is about $125,000,000. Cod, mackerel, lobsters and oysters are the chief products of the Atlantic coast fisheries, and salmon leads on the Pacific coast. The catch on the Great Lakes includes whitefish, lake trout and sturgeon.

Agriculture

General Survey. For more than a century the United States has been the leading agricultural country of the world, and not one-half of the agricultural resources have been developed. The mountains and large areas of arid land are not suited to the growing of crops, but some of these lands offer good pasturage, and upon them millions of cattle, horses and sheep are raised. In 1910 less than one-half of the land was in farms, and only a little more than one-half of that in farms was under cultivation. In 1917 there were in the country about 585,000,000 acres of unappropriated and unsurveyed land (see LANDS, PUBLIC). This is an area more than three times the area of Texas, and much of it will yield the farmer good returns for his investment and labor.

The United States has the largest acreage of cultivated land of any country in the world except possibly, China, for which statistics are not obtainable. The crop acreage of the United States exceeds that of all the great countries of Europe combined, excluding Russia. Of still greater significance is the acreage per capita of population, which in the United States is 3.5 per person, while in European countries it is from 1.5 to 1, and in the United Kingdom only 0.4. In other words, there is 8.4 times as much land per person in crops in the United States as in the United Kingdom, and the improved land per person is much more than this.



RELATIVE PROPORTIONS OF LAND, IMPROVED AND UNIMPROVED

With reference to the food supply of the United States, the Department of Agriculture at Washington makes the following statement:

> The United States is practically independent of the rest of the World in the food supply, except for coffee, tea, sugar, cocoa, bananas and olive oil; and the principal source of supply of these food products, except tea and olive oil, is found in the western hemisphere.
>
> Of all the cereals except rice, the United States produces more than it consumes. The United States produces and consumes about 70 per cent of the world's corn, over 25 per cent of the world's oats, between 15 and 20 per cent of the world's barley. Of the world's rye, the United States produces only about 2 per cent and of the world's rice less than 1 per cent.

Agricultural Regions. The great agricultural regions are the prairies of the Mississippi Basin, east of the 100th meridian; the land bordering on the Gulf of Mexico, and the valleys of the Pacific slope. The Appalachian region is not so fertile as the others. However, in the valleys and on other low lands there are many valuable farms. In this part of the country the raising of cereals is not profitable, and the region cannot compete with the Mississippi Basin; hence the region is characterized by small farms, whose occupants are engaged in a variety of inter-

DOMINION OF CANADA
PACIFIC OCEAN
ATLANTIC OCEAN
GULF OF MEXICO
MEXICO
GRAIN AND FRUITS
WOOL AND LIVE STOCK
SPRING WHEAT
CORN AND WINTER WHEAT
DAIRYING AND MIXED FARMING
COTTON
Seattle
Columbia
Missouri
Minneapolis
St Paul
Duluth
Milwaukee
Chicago
Denver
San Francisco
Los Angeles
St Louis
Cincinnati
Pittsburg
Philadelphia
New York
Boston
Atlanta
Savannah
Mobile
Pensacola
New Orleans
Galveston
Rio Grande
Colorado
Arkansas
Ohio
St Lawrence
LUMBER
WHEAT
COPPER
SILVER
GOLD
IRON
COAL
CORN
OATS
BARLEY
HAY
POTATOES
TOBACCO
WOOL
DAIRYING
LIVE STOCK
STOCK FEEDING
PETROLEUM
ORANGES AND LEMONS
TRUCK FARMING
PHOSPHATE
NAVAL STORES
SALT
LEAD
ZINC
KAOLIN
WASHINGTON
OREGON
MONTANA
NORTH DAKOTA
SOUTH DAKOTA
WYOMING
NEVADA
UTAH
COLORADO
NEBRASKA
KANSAS
OKLAHOMA
TEXAS
MINNESOTA
IOWA
MISSOURI
ARKANSAS
LOUISIANA
MISSISSIPPI
TENNESSEE
KENTUCKY
INDIANA
OHIO
WEST VIRGINIA
VIRGINIA
PENNSYLVANIA
NEW YORK
MICHIGAN
WISCONSIN
ILLINOIS
ARIZONA
NEW MEXICO
ALABAMA
GEORGIA
SOUTH CAROLINA
NORTH CAROLINA
FLORIDA
MAINE
VERMONT
N.H.
MASS.
CONN.
ONTARIO
UNITED STATES
SHOWING
PRODUCTS
AND
CHIEF INDUSTRIES
SCALE OF MILES
0 100 200 400

ests. The arid region, including the states within the Rocky Mountain plateau and the southern part of California, embraces nearly one-third of the country. Over most of this the soil is fertile, and wherever water can be supplied for irrigation, abundant crops are raised. The national government has undertaken works of gigantic proportions, for the purpose of reclaiming as much as possible of this region. The valleys of the Pacific slope, where well watered, produce abundant crops of all plants which can be raised in that climate.

The product map on page 3683 shows that agriculturally the country is divided into six regions. The words in large type indicate the chief crop or industry in each region. Those in smaller type indicate other products and industries. A careful study of this map will show that the northern New England states and New York are chiefly engaged in mixed farming and dairying, and that each of the other regions is devoted to one or more principal crops or industries, each of which is worthy of special consideration. For the development of agriculture in the country, see AGRICULTURE, and for more particular accounts, see subhead *Agriculture,* under the articles treating of the different states.

Cereals. As a whole, cereals constitute the most important agricultural product of the country. The great region devoted to these crops comprises the states of the Mississippi Basin, portions of Pennsylvania and West Virginia, and portions of Oregon, Washington and California. The leading wheat-producing states are Minnesota, North Dakota, Kansas, Nebraska and South Dakota. More than half the crop is winter wheat. The annual crop varies from 650,000,000 to about 760,000,000 bushels. In 1917 it was 650,828,000 bushels. The leading corn-producing states are Illinois, Iowa, Missouri, Indiana, Nebraska and Kansas. The annual crop varies from about 2,500,000,000 bushels to 2,900,000,000 bushels. In 1917 it was 3,159,494,000 bushels. The leading states in the production of oats are Illinois and Iowa. The crop amounts to about 210,000,000 bushels yearly. Rice is produced in Louisiana, South Carolina, Texas, Georgia, North Carolina and California. The annual crop is about 36,000,000 bushels. Considerable buckwheat is grown in some states, and some of the Northern states also produce more or less rye; but in the production of this grain the United States is far behind some of the European countries.

Cotton and Tobacco. Cotton is the chief product of the Southern states and the one from which they derive the greatest amount of money. The annual crop amounts to about 11,000,000 bales, of 500 pounds each.

The leading states in its production are Texas, Mississippi, Georgia, Alabama, South Carolina and Arkansas. Tobacco is also an important crop, and it is generally distributed over the country. The amount grown yearly is about 1,200,000,000 pounds. The leading states in tobacco production, in the order of their importance, are Kentucky, North Carolina, Virginia, Ohio, Tennessee, Pennsylvania and South Carolina. A number of other states also raise considerable quantities.

Fruit. Horticulture is an important branch of agriculture, and the raising of fruit is the leading occupation in Florida, Delaware, parts of New Jersey, the western part of New York and the southern and central parts of California, while its production engages the attention of a large number of farmers in Washington, Oregon, the mountainous part of Montana and a number of other states. In Florida pineapples and oranges are the chief fruits. In California oranges, lemons, apricots, grapes, prunes and almonds, among the larger fruits, are of greatest importance, while grapes and small fruits are raised in large quantities. Grapes and peaches are grown extensively in New York, and apples and peaches are produced in New York, Michigan, Colorado, Missouri and numerous other states. Small fruits, including raspberries, blackberries and strawberries, are found in nearly all parts of the country where there is sufficient rainfall for their growth.

Other Crops. In Minnesota, Wisconsin and some other Northern states, considerable flax is grown, mostly for the seed. Sugar cane is raised in Louisiana and a few other of the Gulf states, and the sugar beet is grown in many of the states. Potatoes are raised in large quantities in Wisconsin, Minnesota and New York. Sweet potatoes are grown in Virginia, in the southern part of Illinois and in a number of the Southern states. Vegetables are grown for market in Delaware and New Jersey and in nearly all states in which large cities are located. New

York and the states on the Pacific slope are noted for their production of hops.

Live Stock. Much of the arid region is well suited to grazing, and in this section of the country large herds of cattle and sheep are raised. Texas leads in the production of cattle, and Wyoming is first in the production of sheep. Some of the corn states, particularly Iowa and Illinois, are noted for their beef cattle and hogs. New York, the northern New England states, Iowa, Illinois and Wisconsin are extensively engaged in dairying, and the value of the dairy products is great. The annual production of milk in the United States amounts to 85,000,000,000 pounds.

Poultry. The raising of poultry is an important branch of agricultural industry, and it engages many people in all parts of the country, though it has received less attention on the Pacific coast than in other regions. About 500,000,000 fowls are raised annually and 1,600,000,000 eggs are produced. The annual value of the poultry products is about $250,000,000. The leading poultry states are Illinois, Missouri, Iowa, Ohio and Indiana.

Manufacturing Industries

Causes of Development. During the early period of existence as a nation everything was made by hand, and the clothing and other necessities for the family were produced in the home. The mother was housekeeper, spinner, weaver and tailoress; the father was farmer, carpenter, blacksmith and harnessmaker, and the traveling shoemaker came around once or twice a year and made shoes for the family. Gradually, these industries began to be separated. One family in the settlement made the cloth, one man did the carpenter work and another became a blacksmith. Shops were erected, and where there was water power simple machinery was installed. As the number of settlers increased, factories became more numerous and the distinction between trades more marked. Nevertheless, the growth of the manufacturing industries was slow until about 1860, and since that date, they have developed more rapidly than any other lines of industry. Now the United States is the leading manufacturing country of the world, producing more than one-third of the world's manufactured products.

The chief causes for this rapid development of the United States as a manufacturing nation are the country's abundant agricultural resources, its mineral resources, its extensive forests, the remarkable transportation facilities afforded, the inventive genius of the people and the opportunities for an extensive trade between the states. The extent and variety of agricultural products assure an abundance of food supplies for the people, and the methods of agriculture are such that a comparatively small proportion of the inhabitants can supply food for the entire nation and also for export to foreign lands. This leaves large numbers free to engage in other occupations, and this enables a larger proportion of the people to engage in manufacturing industries than would be possible were the agricultural conditions such that nearly all were dependent for support upon their own efforts in tilling the soil.

The abundant supply of coal, iron and other useful metals makes the manufacture of many products convenient and comparatively cheap. This is particularly true of iron and steel and their products, while the presence of clay and various forms of building stone is of equal advantage in the construction of factories and other establishments connected directly or indirectly with manufacturing industries. The great forest areas provide an abundance of lumber and timber for all articles made of wood; hence this line of manufactures has been developed on a very large scale.

In addition to the coal for fuel, thousands of streams furnish abundant water power, and the invention of the electric motor has brought into use many power sites so far from manufacturing centers that the location of factories on them formerly was impracticable. Since electric power can be carried long distances without loss, it may operate factories hundreds of miles from its source. The perfection of the gasoline engine has greatly increased the power for propelling machinery. While not adapted to large factories this engine supplies power to many small industries.

The American people have always been noted for their mechanical ingenuity, and they have produced a great number of machines and devices which have greatly influenced, and in some cases have revolutionized, the industries of the world. Chief among these are the cotton gin, the sewing machine, the steamboat, the reaping machine,

the telegraph and the telephone. To these, many others of lesser importance might be added. Their combined effect has been to simplify and cheapen many processes of manufacturing, transportation and communication, all of which have aided in the development of manufacturing industry.

The freedom of commerce between the states is one of the greatest advantages enjoyed by the country. In no other region of the world is there such an extent of country entirely free from tariff barriers. In addition to this, the country embraces localities whose needs differ widely; consequently there is a demand for interchange of products among these sections, and these conditions have combined to build up a domestic commerce much greater than that known in any other country in the world. This has led to the development of various lines of manufactures. No other country has such extensive and numerous transportation lines, both by water and by rail; hence the carrying of commodities from one section to another is comparatively easy and cheap.

Location of Manufacturing Districts. The manufacturing districts are very unevenly distributed over the country. In general, those states east of the Mississippi River and north of the Ohio are the leading manufacturing states, and more than four-fifths of all the manufactures in the country are produced within this territory. Without this limit are a few important manufactures, and these are being rapidly developed. Among them are the iron industries of Alabama and Georgia and the cotton industries of Alabama, Georgia, North Carolina and South Carolina. Some of the large cities on the Mississippi are also important manufacturing centers. Chief among these are Saint Louis, Saint Paul and Minneapolis. On the Pacific coast, lumbering, the manufacture of furniture and some other industries are fully developed, while others are increasing in number and importance from year to year.

Leading Industries. Among the many manufactured products of the country the following are the most important: Food products, including flour and meat; iron and steel; textiles; automobiles; lumber and its allied products; leather and its finished products; metals other than iron and steel, with various allied products, and paper. To the manufacture of these commodities should be added printing and publishing, as another major industry.

Food Products. The time was when the farmer carried his wheat to the local mill, brought home the flour, and the wife cooked all the food for the household, but that time has passed, and now much of the food consumed in rural districts as well as the cities is prepared in large establishments. In addition to flour and cured meat, canned goods, breakfast foods, biscuits and numerous other articles turned out by the wholesale bakeries are produced in large quantities and their annual value amounts to hundreds of millions of dollars.

While the amendment to the Constitution prohibiting the manufacture of intoxicating beverages has greatly curtailed the output of these products, the manufacture of so-called "soft drinks," as a substitute for "hard liquor," is a large industry, and it bids fair to grow in importance.

Iron and Steel. The United States produces more iron and steel than any other country. At the outbreak of the World War (1914) the output of pig iron and steel in the United States was nearly equal to the combined output of Germany, France and Great Britain, the next three largest producers. The leading states in the manufacture of iron and steel products are Pennsylvania, Illinois, Ohio and Indiana. Minnesota and Michigan lead in the production of iron ore.

Textiles. New England is the great center for the manufacture of cotton goods, and Massachusetts is the leading state in this industry. Outside of New England, North Carolina, South Carolina, Georgia and Alabama have established extensive cotton mills. In the output of her cotton goods, the United States is second only to Great Britain. Next in importance to the manufacture of cotton goods is the manufacture of woolens, including carpets and hats. Massachusetts, Pennsylvania and Rhode Island are the states in which this industry is principally located, Philadelphia being one of the greatest centers of carpet manufacture in the world. In the manufacture of silk goods the United States is the leading nation, followed by France. The great centers of the industry are in New Jersey and Pennsylvania. Extensive factories for the production of knit goods are also found throughout the New England and North Atlantic states.

Lumber. The lumbering industries naturally center in those states containing extensive forest areas. It is now largest in Oregon and Washington.

Leather. Pennsylvania ranks first in the tanning and finishing of leather, while Massachusetts is the leading state in the production of boots and shoes. Perhaps in no other industry is the effect of American invention and perfection of organization better seen than in the manufacture of boots and shoes. Owing to the invention of a number of ingenious machines, this industry has been highly organized, and the United States produces more boots and shoes than any other country.

Paper. In the manufacture of paper the United States also leads the world. Much of this product is now made from wood pulp, which is generally manufactured in the states that have large supplies of suitable timber for this purpose. The annual output of paper and paper manufactures exceeds $43,000,000.

Automobiles. Although it is one of the youngest industries in the country, the manufacture of automobiles has reached third place among the manufacturing industries. In 1917, 4,242,000 automobiles and trucks were made in the United States, and the value of all automobiles owned in the country was $800,000,000. After 1917 the great war curtailed production. The leading states in the industry are Michigan, Ohio and Illinois. Detroit is the world's greatest center for the manufacture of automobiles.

Other Industries. Connecticut leads in the manufacture of small articles, such as needles, pins, buttons, clocks, and various kinds of hardware. The great watch factories of the country are at Waltham, Mass., and Elgin, Ill. The manufacture of electrical apparatus and appliances is extensive and still on the increase. Before the World War the United States depended upon Germany for most of its chemicals and dyestuffs, but the war prevented the exportation of these products from Germany, and this condition stimulated manufacturing chemists to supply the market with American-made goods. The war also caused a great advance in shipbuilding, placing the country second only to Great Britain in this industry. In the manufacture of agricultural implements and machinery the United States surpasses every other nation. This industry is most extensive in Illinois, Chicago being the leading center. Other states in which it is large are Ohio, New York and Wisconsin. The yearly output is over $297,000,000. The annual production of clay, glass and stone products is over $500,000,000. Besides these larger industries there are many smaller ones, considered as miscellaneous, whose annual output exceeds $1,000,000,000 in value, while the hand trades, or those occupations in which the articles are produced by the use of hand tools, have an annual output exceeding $1,184,000,000.

Transportation and Communication

Waterways. The United States has over 12,000 miles of seacoast and more than 18,000 miles of inland waterways. Formerly the inland waterways were of the greatest importance, since by their means the interior of the country found an outlet to the sea. The most important systems of these waterways are those of the Mississippi River and tributaries and the Great Lakes. Since the construction of railways, the river systems have become less valuable; but the completion of canals, by means of which steamers of deep draft can pass from the lakes to the ocean through the Saint Lawrence River has rendered this waterway of great importance. In connection with it, the construction of the Erie Canal, early in the nineteenth century, opened the way for the transportation of commodities between the Atlantic seaboard and the interior. The important canals are described under their titles.

Railroads. The first railroads of importance in the United States were constructed in 1830 and 1832, and at the close of the latter year there were 23 miles of railway in the country. In 1916 the mileage was over 266,000 or more than that of the entire continent of Europe. It is nearly one-third of all the mileage of the world. Naturally the older states contain the larger number of lines; the portion of the country east of the Mississippi River is fully supplied with railways, so that nearly all towns have convenient means of communication. In the Appalachian region, the longest lines extend approximately north and south; west of these mountains the general trend of the railways is east and west; in the Mississippi Valley there are a number of north and south lines, connecting Chicago and Saint

Louis with important commercial ports on the Gulf of Mexico. Some of these lines extend into Mexico.

Six transcontinental lines now extend to the Pacific coast, and the Canadian Pacific, the Canadian Northern and the Grand Trunk Pacific, only a short distance north of the international boundary line, also render some service to the inhabitants of the northern part of the country. Electric railways connect many towns situated within a few miles of one another, and these systems are being extended to the rural districts, especially in the eastern part of the country and the southern part of California. On the whole, the country is well supplied with water and rail transportation.

Roads. The development of railways and their importance in the industrial systems of the country has caused neglect of wagon roads, and in the construction of these important means of transportation the United States is far behind European countries. In most states the roads are poor, and in some states, during certain seasons of the year, they are well-nigh impassable.

In 1893 the United States Department of Agriculture inaugurated the Good Roads Movement, and since that time the national government has given some assistance in improving the public highways. In 1914 Congress appropriated $25,000,000 for the construction and improvement of roads, and in 1918 this amount was increased to $266,750,000, to be spent within the next three years. This money is divided among the states on condition that each state must appropriate as much money as it receives from the national government. This will create a fund sufficient to improve all the roads in the country.

Communication. Telegraph and telephone lines are found in all parts of the country, and no town of importance is now without one or both of these conveniences. Telephone lines extend through all the principal rural sections, most farm houses have a telephone. The postal system is also one of the best in the world, taking rank with the systems of Great Britain, Germany and France, and meeting all of the reasonable demands of the country.

Commerce

Domestic Commerce. The domestic commerce of the United States is larger than that of any other country and far exceeds its trade with foreign nations. The widely separated sections of the country, differing from one another in climate, soil and products, create a great demand in each section for the products of the others, and in the supplying of this demand an extensive commerce has sprung up. The amount of this trade cannot be obtained, since no record is kept of the shipments of merchandise that are not entered at customhouses; but that it is very great and constitutes one of the leading industries of the country is evident to all who are conversant with commercial and industrial systems.

Foreign Commerce. Before 1915, in its foreign commerce the United States was exceeded by Great Britain and Germany and ranked third among the great commercial nations. But the World War created such a demand for American products that it advanced to first place. For the year ending June 30, 1917, the exports amounted to $6,290,048,394 and imports to $2,659,355,185. Under normal conditions the exports are divided among the various products as follows: Agricultural products, 62 per cent; manufactures, 30 per cent; forest products, 4 per cent; mining products, 3 per cent. The imports have the following apportionment: Raw material, 38 per cent; food and domestic animals, 21 per cent; manufactures, 16.79 per cent; luxuries, 14.47 per cent.

Most of the foreign trade was carried on with the European nations in the following order of importance: The United Kingdom, Germany, France, Netherlands, Belgium. Italy and Russia also have a considerable share. Of Asiatic nations Japan has the first place and China the second. Europe takes about three-fourths of the exports and supplies one-half of the imports. Of the other foreign nations, Canada is the most important in North America, and Brazil, Argentina and Chile lead in South America. The great seaports engaged in European trade are New York, Boston, Philadelphia and Baltimore, while those engaged in trade with China, Japan and the Philippines are San Francisco, Seattle and Tacoma. The Panama Canal has also brought the Atlantic ports much nearer these far-eastern countries.

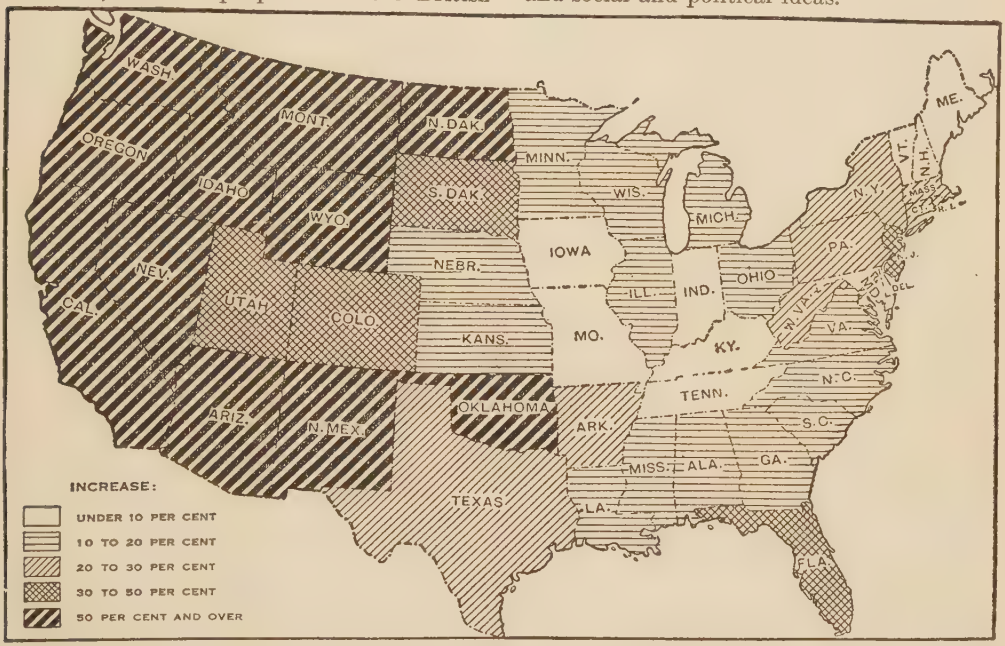
While American products are found in all countries of the world, the foreign commerce of the United States has until recently been crippled, from the fact that nearly

all of it is carried in the ships of other nations, American vessels being engaged almost entirely in the coastwise trade. During the World War the number of American merchant ships was greatly increased, and most of the new ships were engaged in foreign trade, placing the country again approximately in the position it held before the Civil War.

The People

Colonial Period. During the Colonial Period settlements were made by English, Scotch, Irish, Swedes, Dutch, French and Germans, but the people from the British Isles far outnumbered all others. With the exception of the Germans, about 100,000 of whom settled in Pennsylvania, the other nationalities in time blended with the English, so that in language, customs, government and commercial methods the colonies were thoroughly Anglo-Saxon.

Many of the first settlers were people of exceptional character and ability, who were driven to the New World by civil or religious persecution. This applies to the Quakers and Germans in Pennsylvania and the Huguenots of South Carolina, as well as to the Puritans of New England. Although these people were fewer in number than those who came to better their condition, by their force of character and superior education they impressed their ideals upon the others, and at the beginning of the Revolutionary War the 2,000,000 or more inhabitants of the English colonies were firmly united. Moreover, during this century and a half of their existence the political ideas of the colonies were developed and established so firmly that there was little danger of their being changed by immigration in the years that followed, and the country entered upon its national existence with a population firmly united as to nationality and social and political ideas.



MAP CLASSIFYING STATES WITH RESPECT TO THE PERCENTAGE OF INCREASE OF POPULATION BETWEEN TWELFTH AND THIRTEENTH CENSUSES.

Increase in Population. The first national census was taken in 1790. At that time the United States contained in round numbers 4,000,000 inhabitants. About one-fifth of these, or 750,000, were negroes. The growth in population by decades is shown in the table on page 3690.

The greatest growth has been in the central and western states, where the increase has been unusually large. This is due to the fertility of the soil in the Mississippi Valley and the opportunities and advantages offered by a new country. These attracted large numbers of immigrants.

Movement Westward. In 1790 the center of population was 23 miles east of Baltimore,

The center moved westward with varying degrees of rapidity, as indicated by the stars on the map printed on this page. The

CENSUS	POPULATION, excluding Alaska, Indian reservations and island possessions.	INCREASE	
		NUMBER	PER CENT
1920.....	.....	.....	
1910.....	91,972,266	15,977,691	21.0
1900.....	75,568,686	12,946,436	20.7
1890.....	62,622,250	12,466,467	24.9
1880.....	50,155,783	11,597,412	30.1
1870.....	38,558,371	7,115,050	22.6
1860.....	31,443,321	8,251,445	35.6
1850.....	23,191,876	6,122,423	35.9
1840.....	17,069,453	4,203,433	32.7
1830.....	12,866,020	3,227,567	33.5
1820.....	9,638,453	2,398,572	33.1
1810.....	7,239,881	1,931,398	36.4
1800.....	5,308,483	1,379,269	35.1
1790.....	3,929,214	.....	.....

center of population has varied slightly from time to time from an east and west line, and during the period in which the states in the Mississippi Valley and farther west were being settled it moved forward more rapidly than it did during the decade between 1900 and 1910. During this decade the center of population advanced westward about 39 miles, being in 1910 in the city of Bloomington, Ind.

Density. Had the population been evenly distributed over the country, excluding Alaska and Hawaii, in 1910, there would have been thirty-one people to the square mile. The average density was 30.9. Rhode Island, with 508.5 people to the square mile, was the most densely populated; Massachusetts, with 419, was second; New Jersey had 338; Connecticut, 231; New York, 191; Pennsylvania, 171; Maryland, 130; Ohio, 117. Delaware, 103; Illinois, 100.7. All other states had fewer than 100 people to the square mile. Wyoming, with 1.5, and Nevada, with 0.7, were the least densely populated. The percentage of increase from 1900 to 1910 is shown in the accompanying map, taken from *Bulletin* 109 of the Bureau of the Census. By this it will be seen that the movement of population has been to the states west of the Mississippi. Washington leads, with an increase of 120.4 per cent; Oklahoma, with an increase of 109.7 per cent, is second, and Idaho, with an increase of 101.3 per cent, is third. The increase in population since the census in 1910 will make but very slight changes in these figures.

Growth of Cities. Since the organization of the government, the population of cities and towns has increased far more, proportionately, than the population of the country at large, and this proportion has been constantly increasing. In 1790, 3.4 people out of every 100 lived in cities of 8,000 or more inhabitants. In 1840 this proportion had increased to 8.5 per 100. In 1850, one-eighth of the people dwelt in cities of 8,000 or over; in 1890, over one-fourth, and in 1910, over one-third. This rapid growth of cities is due, principally, to the

MOVEMENT OF THE CENTER OF POPULATION

establishment of the factory system, necessitating the bringing together of a large number of operatives; to increased facilities of transportation, to immigration, and to a desire for better schools.

The following table includes the seventy largest cities of the United States. The population statistics are government estimates of 1917:

1.	New York	5,737,492
2.	Chicago	2,547,201
3.	Philadelphia	1,735,514
4.	Saint Louis	768,630
5.	Boston	767,813
6.	Cleveland	692,259
7.	Detroit	619,648
8.	Baltimore	594,637
9.	Pittsburgh	586,196
10.	Los Angeles	535,485
11.	Buffalo	475,781
12.	San Francisco	471,023
13.	Milwaukee	445,008
14.	Newark	418,789
15.	Cincinnati	414,248
16.	New Orleans	377,010
17.	Minneapolis	373,448
18.	Washington	369,282
19.	Seattle	366,445
20.	Jersey City	312,557
21.	Portland	308,399
22.	Kansas City, Mo	305,816
23.	Indianapolis	283,622
24.	Denver	268,439
25.	Rochester	264,714
26.	Providence	259,895
27.	Saint Paul	252,465
28.	Louisville	240,808
29.	Columbus	220,135
30.	Oakland	206,405
31.	Toledo	202,010
32.	Atlanta	196,144
33.	Birmingham	189,716
34.	Omaha	177,777
35.	Worcester	166,106
36.	Syracuse	158,559
37.	Richmond	156,687
38.	New Haven	152,275
39.	Memphis	151,877
40.	Spokane	150,323
41.	Scranton	149,541
42.	Paterson	140,512
43.	Grand Rapids	132,861
44.	Fall River	129,828
45.	Dallas	129,738
46.	Dayton	128,939
47.	Bridgeport	124,724
48.	San Angelo	123,831
49.	New Bedford	121,622
50.	Nashville	118,136
51.	Salt Lake City	117,399
52.	Sowell	114,366
53.	Cambridge	114,293
54.	Trenton	113,974
55.	Hartford	112,831
56.	Tacoma	112,770
57.	Houston	112,384
58.	Youngstown	112,282
59.	Reading	111,607
60.	Springfield, Mass	108,668
61.	Camden	108,117
62.	Albany	106,632
63.	Fort Worth	104,562
64.	Lynn	104,534
65.	Des Moines	104,052
66.	Schenectady	103,774
67.	Yonkers	103,066
68.	Lawrence	102,923
69.	Kansas City, Kans	102,096
70.	Oklahoma City, Okla	97,588

Immigration. Previous to 1800 no statistics of immigration were kept. Good authorities, however, estimate that at the beginning of the Revolutionary War about one-fifth of the people were immigrants and that from 1790 to 1800 about 5,000 people entered the country each year. During the first half-century following the adoption of the Constitution, immigration was small; and previous to the Civil War, only about 1,000,000 foreigners had settled in the United States. After 1870 immigrants began to come by the thousands, and by 1910 they had added nearly 30,000,000 to the population. Previous to 1895 most of the immigrants were from the northern countries of Europe, the majority coming from the British Isles, Germany, Norway and Sweden. Most of them settled in the new states, in the northern part of the Mississippi Valley, where their descendants now constitute a thrifty, law-abiding and industrious people. Since that time, however, the character of immigration has almost entirely changed, and by far the larger proportion of immigrants come from Italy and Austria-Hungary, while smaller numbers are received from other countries of southern Europe. Since the beginning of the century, the tide of immigration has very materially increased.

In 1850 only 9.7 people in 100 among the population were foreign born, while in 1910 the proportion exceeded 14. For the year ending June 30, 1910, 1,041,570 aliens entered the United States, and each year thereafter until 1915 over 1,000,000 immigrants were received each year. Between 1820 and 1914 about 32,000,000 aliens entered the country, exclusive of temporary arrivals, a number equal to almost one-third the entire population. Immigration was greatly reduced during the World War. In 1914, the number of immigrants was 1,218,480; in 1915 it was 326,700, and for 1916 and 1917 the number was less than 300,000, because of the war which was being waged in Europe. In 1917 Congress passed a law restricting

immigration to those who could read at least one language. For a fuller account of this subject, see the article IMMIGRATION.

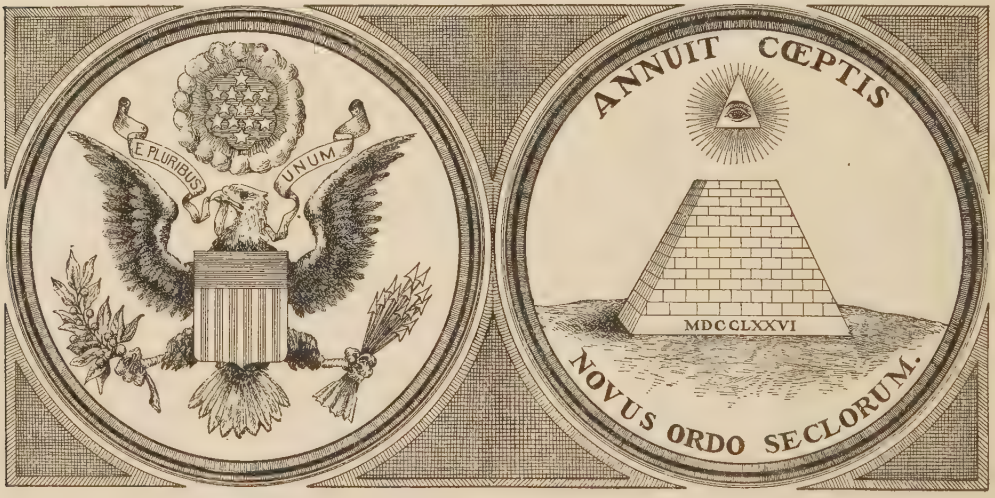
Color. In 1790 the negroes constituted one-fifth of the population and in 1910, less than one-ninth; that is, of the entire population, 9,827,763 were negroes. In 1917 the number had increased to 11,010,365, according to the estimate of the United States government.

The great majority of negroes are found in the states south of the Ohio River, including Texas and Arkansas, though bordering states contain large numbers. In South Carolina and Mississippi, the negroes outnumber the white population. In 1910 there were also 71,531 Chinese and 72,157 Japanese in the United States. The greater proportion of oriental immigrants are confined to the Pacific states. There were also in the country 265,683 Indians, most of whom were on reservations. In 1917 the number of Indians was estimated at 336,000. Since 1910 the number of Japanese has increased, but there has been practically no change in the number of Chinese.

Present Character. The population of the United States comprises representatives of nearly every race and nation, and the large cities are probably more cosmopolitan than any others in the world. Because of this characteristic, the percentage of illiteracy in the country is higher than it is in some of the European countries, namely, Germany, Switzerland, Scotland, Holland, France and England. In large cities and in some rural communities immigrants settle in communities and for years maintain their language and many of the customs of the Old World; but in most instances the children educated in the public schools become Americanized.

With very few exceptions, English is the language spoken throughout the country, and everywhere it is the official language of the land. After the United States entered the World War many states prohibited the teaching of any living language, except English in the public schools.

In 1900 the population was 76,303,387, not reckoning the outlying possessions. In 1910 it was 91,972,266. In 1917 the estimate for continental United States was 103,635,306, and for the outlying possessions, 10,511,300. The population of each of these possessions is given in the respective articles describing them.



GREAT SEAL OF THE UNITED STATES

Government

General Features. The national government began with the Continental Congress, which, after the Declaration of Independence, framed the first national constitution, known as the Articles of Confederation. This instrument, however, was soon found to be inadequate to the needs of the country and in 1787 the Constitution, establishing the present government, was framed. As organized under the Constitution, the govern-

ment of the United States is a federal republic, in which the states are self-governing, each having a republican form of government.

The powers of the national government are defined by the Constitution, and all powers not specifically delegated to the United States are reserved to the states and to the people. However, the states are prohibited from the exercise of certain powers, among which are making treaties with foreign nations, declaring war and coining money. There are other powers, also, which they are forbidden to exercise except by permission of the national government.

The national government is organized in three coördinate departments, legislative, executive and judicial.

While these departments, within certain limits, are independent of one another, each is so related to the others as to form, with them, an organic whole. For instance, laws must originate in the legislative department, but the president has the power of veto, and the judicial department can render any law null and void by declaring it unconstitutional. The legislative department also has power to impeach and try United States officers, including the head of the executive department, and the president cannot appoint to certain offices except by the advice and consent of the Senate. The relation of these departments to each other is shown in the diagram accompanying the article CIVIL GOVERNMENT, and the government of each state is described in the article on that state.

Legislative Department. The legislative department consists of a Congress, comprising a House of Representatives and a Senate. The House of Representatives consists of members apportioned among the states according to population, the apportionment being made every ten years. Each state has at least one Representative, whatever its population. The members are chosen at a general election, on the first Tuesday after the first Monday of November, in even-numbered years, and they hold their offices for two years. The apportionment in 1911 was one Representative to every 211,430 inhabitants, and the number of Representatives according to this apportionment was 435. The House of Representatives elects one of its members as the presiding officer, entitled *speaker*, for a term of two years. All bills for raising revenue must originate in this branch of Congress, but in passing bills, the two houses must agree, and they have equal power to reject measures.

The Senate is composed of two members from each state, formerly chosen by the state legislature, but since the adoption of the Seventeenth Amendment, elected by popular vote for a term of six years. Members are so elected that the terms of one-third of the Senators expire every two years. The presiding officer is the Vice-President of the United States. The Senate has sole power to try cases of impeachment and to ratify treaties with foreign nations.

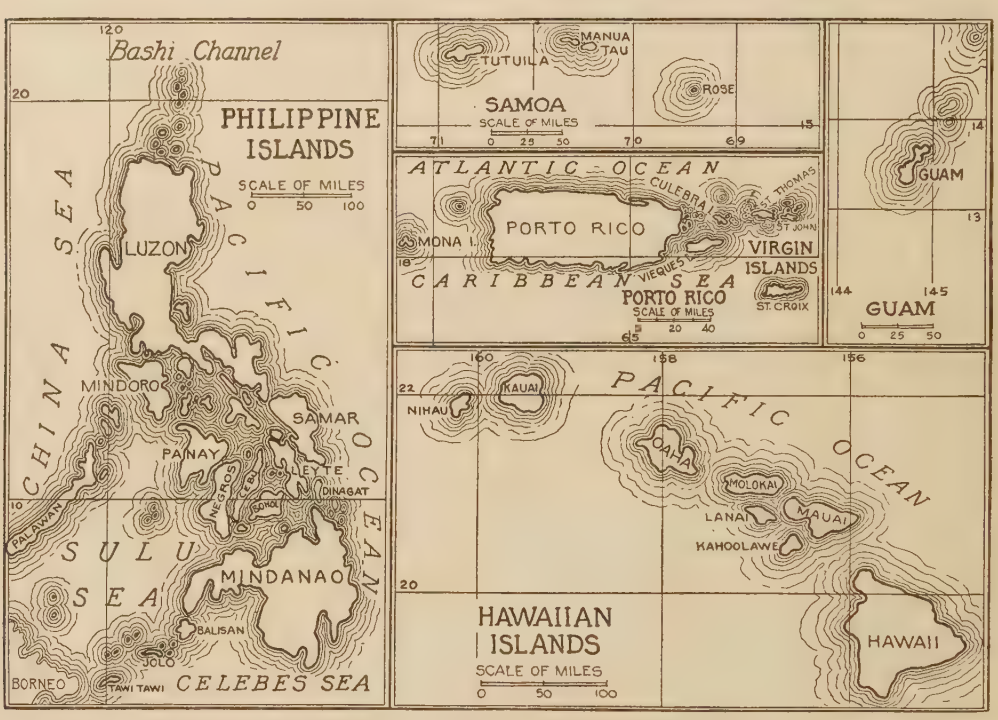
Executive Department. The executive department consists of the President, the Vice-President and such other officers as the President may select or as may be provided for by law. The President and the Vice-President are chosen by electors for a term of four years. In order that this branch of the government might be efficiently administered, Washington established, in 1789, the following departments: State, War and Navy, Treasury and Postoffice. Since then the following departments have been added: Interior, 1849; Justice, 1870; Agriculture, 1889; and Commerce and Labor, 1903, which in 1913 was divided into the Department of Commerce and the Department of Labor. With the exception of the Department of Justice and the Postoffice Department, the officers at the heads of the departments are styled Secretaries. The Attorney-General is the head of the Department of Justice, and the Postmaster-General is at the head of the Postoffice Department. These heads of the department, taken collectively, constitute the President's Cabinet. Each of the departments is explained under its title. The heads of departments and other important officers are appointed by the President, with the advice and consent of the Senate, while many minor officers are appointed by the President without consulting the Senate, or by the heads of departments.

The President is commander in chief of the army and navy, has the power to call Congress in special session, when necessary, and can veto any bill passed by Congress, though such a bill may be passed over his veto by a two-thirds vote of the members of each house. It is the President's duty to send a message to Congress at the beginning of each session, setting forth the condition of the country and recommending such legislation as he

believes is necessary. He also has power to grant reprieves and pardons to persons who are sentenced by United States courts, and it is his duty to see that the laws are executed throughout the country and all of its dependencies.

The Judicial Department. The Judicial Department consists of the Supreme Court and such other courts as may from time to time be established by law. At present the United States courts consist of the Supreme Court, nine Circuit Courts of Appeals, 103 District Courts, a Court of Claims, a Court of Private Land Claims, a Court of Appeals for the District of Columbia, the Supreme Court of the District of Columbia, the territorial courts and admiralty courts. The organization and jurisdiction of these courts are described in the article COURTS.

Outlying Possessions. The acquisition of the Philippine Islands and Porto Rico in 1898 entailed upon the United States a new problem in government. The inhabitants of these islands had never governed themselves, and they were not prepared to assume the responsibilities of government. They were at first governed by a governor-general and commissioners appointed by the United States, and the inhabitants were given an active part in the management of government affairs as rapidly as they became competent. Now both of these possessions have their own legislatures. For a detailed statement, the reader is referred to the subhead *Government* in the articles describing each of these possessions. Alaska and Hawaii are organized territories. The Virgin Islands, acquired by purchase from Denmark in 1917, were placed temporarily under a naval governor.



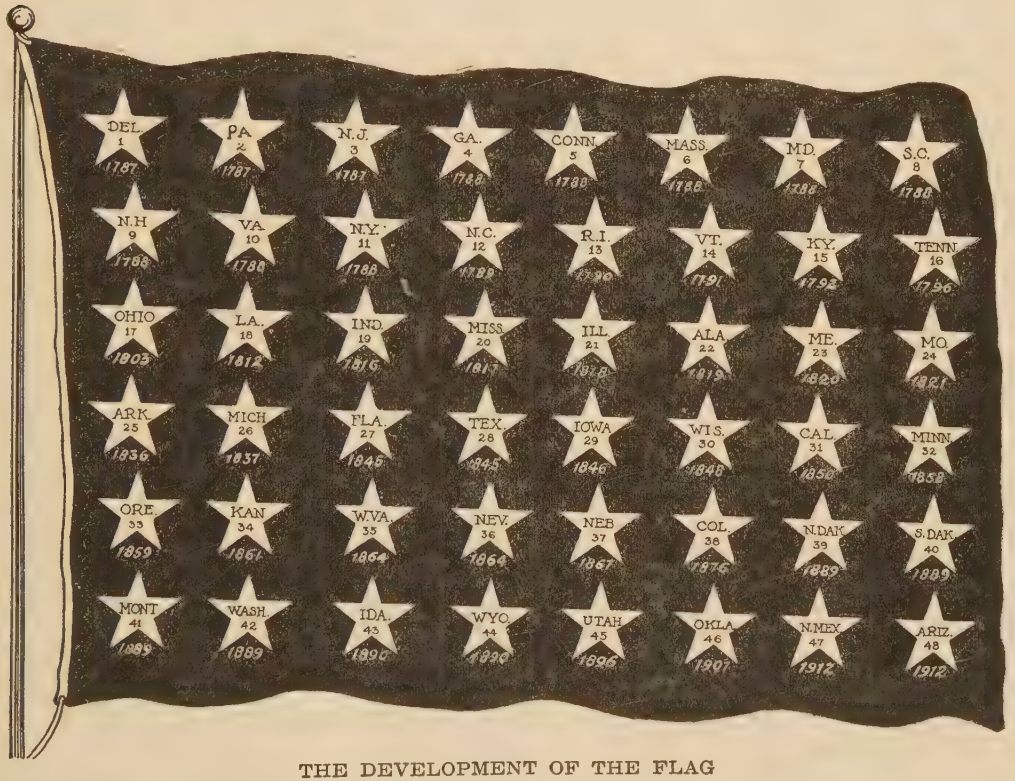
POSSESSIONS OF THE UNITED STATES NOT ON THE AMERICAN CONTINENT

State Governments. The government of each state is based upon a constitution, and in the main follows the plan of the national government. Nearly all states have a legislature of two branches, a Senate and a House of representatives. In many the members of the senate are elected for a longer term than the members of the house, and in some states the terms of only a part of the senators expire at one time, so that one-half of them are chosen at each general election. The executive officers of the state are usually a governor, a lieutenant-governor, a secretary of state, a treasurer, an attorney-general and a superintendent or commissioner

of public instruction. To these some states add an auditor of public accounts and a comptroller.

The state government deals with all affairs pertaining to the interests of the state, such as laws governing marriage and divorce, the obligation of contracts, the settling of estates, the transference of real property and the regulation of loans, interests and mortgages.

In the matter of courts there is a greater divergence of plan. Almost every state has a supreme court, which has a limited original jurisdiction, and to which cases of certain importance may be appealed from the lower courts. Below this are circuit courts, which usually have jurisdiction over several counties, and in some states there are county courts. Almost all the states have county probate courts for the settlement of estates.



THE DEVELOPMENT OF THE FLAG

Local Government. The early colonists established two forms of local government, the *township* form in New England, and the *county* form in Virginia and other southern colonies. These shaped the local government in most of the original states. Under the former plan the township is the unit, and the township officers are chosen at an annual town meeting, in which all voters have a right to participate. All the public business of the local community is in the hands of these town officers. In the county system the township is not recognized, the county being the principal unit of government. The only subdivision is the parish. Under this plan nearly all matters of public interest are looked after by county officers, who are chosen at regular elections. In most states these are known as county commissioners, or county supervisors. Between New England and Virginia a third form of local government grew up. It was the outgrowth of the two systems described above and may be called the *mixed,* or *township-county,* system. Under this scheme certain minor duties devolve upon township officers, while more important local duties rest with county officers. The officers of the county include commissioners, representing the different towns of the county, an auditor, a register of deeds, a treasurer and a superintendent of schools, or school commissioner. Other officers are sometimes added. This system, on the whole,

STATE	POPULAR NAME	EXTREME LENGTH	EXTREME BREADTH	TOTAL AREA SQUARE MILES	RANK	ADMITTED TO THE UNION	ESTIMATED POPULATION (1918)
Alabama	Cotton State	330	200	51,998	28	1819	2,395,270
Arizona		390	335	113,956	5	1912	272,034
Arkansas	Bear State	240	275	53,335	26	1836	1,792,965
California	Golden State	770	375	158,297	2	1850	3,119,412
Colorado	Centennial State	270	390	103,948	7	1876	1,014,581
Connecticut	Nutmeg State	75	90	4,965	46	*	1,286,268
Delaware	Blue Hen State	110	35	2,370	47	*	216,941
Florida	Peninsula State	460	400	58,666	21	1845	938,877
Georgia	Empire State of the South	315	250	59,265	20	*	2,935,617
Idaho	Gem of the Mountains	490	305	83,888	12	1890	461,766
Illinois	Prairie State	380	205	56,665	23	1818	6,317,734
Indiana	Hoosier State	265	160	36,354	37	1816	2,854,167
Iowa	Hawkeye State	210	300	56,147	24	1846	2,224,771
Kansas	Sunflower State	200	400	82,158	13	1861	1,874,195
Kentucky	Blue Grass State	175	350	40,598	36	1792	2,408,547
Louisiana	Creole State	275	280	48,506	30	1812	1,884,778
Maine	Pine Tree State	235	205	33,040	38	1820	782,191
Maryland	Old Line State	120	200	12,327	41	*	1,384,539
Massachusetts	Old Bay State	110	190	8,266	44	*	3,832,790
Michigan	Wolverine State	400	310	57,980	22	1837	3,133,678
Minnesota	Gopher State	400	350	84,682	11	1858	2,345,287
Mississippi	Bayou State	340	180	46,865	31	1817	2,001,466
Missouri	Bullion State	280	300	69,420	18	1821	3,448,498
Montana	Treasure State	315	580	146,997	3	1889	486,376
Nebraska	Tree-Planter State	205	415	77,520	15	1867	1,296,877
Nevada	Sagebrush State	485	315	110,690	6	1864	114,742
New Hampshire	Granite State	185	90	9,341	43	*	446,352
New Jersey	Garden State	160	70	8,224	45	*	3,080,371
New Mexico		390	350	122,634	4	1912	437,015
New York	Empire State	310	320	49,204	29	*	10,646,989
North Carolina	Old North State	200	520	52,426	27	*	2,466,025
North Dakota	Flickertail State	210	360	70,837	16	1889	791,437
Ohio	Buckeye State	205	230	41,040	35	1803	5,273,814
Oklahoma	Boomer State	210	585	70,057	17	1908	2,377,629
Oregon	Beaver State	290	375	96,699	9	1859	888,243
Pennsylvania	Keystone State	180	300	45,126	32	*	8,798,067
Rhode Island	Little Rhody	50	35	1,248	48	*	637,415
South Carolina	Palmetto State	215	235	30,989	39	*	1,660,934
South Dakota	Sunshine State	245	380	77,615	14	1889	735,434
Tennessee	Big Bend State	120	430	42,022	34	1796	2,321,253
Texas	Lone Star State	620	760	265,896	1	1845	4,601,279
Utah	Salt Lake State	345	275	84,990	10	1896	453,648
Vermont	Green Mountain State	155	90	9,564	42	1791	366,192
Virginia	Old Dominion	205	425	42,627	33	*	2,234,030
Washington	Chinook State	230	340	69,127	19	1889	1,660,578
West Virginia	Panhandle State	225	200	24,170	40	1863	1,439,165
Wisconsin	Badger State	300	290	56,066	25	1848	2,553,983
Wyoming	Equality State	275	365	97,914	8	1890	190,380

*Original State.

is more satisfactory than either of the others, and it has influenced the systems of local government in practically all of the western states. It combines sufficient local interest with an economy in management that is not possible under the old township system.

Territories. As the national domain was settled, territorial forms of government were organized to exercise control over such areas as would best meet the needs of the inhabitants. As the territories became more densely populated they were subdivided, and the subdivisions were in time admitted into the Union and became states. Under a territorial government the governor and territorial judges are appointed by the President with the advice and consent of the Senate; otherwise the territory administers its local affairs, the same as does a state, electing a legislature which enacts laws to meet the needs of its inhabitants. In 1919 Alaska and Hawaii were territories.

Finance. The Constitution gives Congress power to levy and collect direct taxes, duties on imported goods and excise taxes. Direct taxation soon proved to be unpop-

AMERICA AT THE TIME OF THE REVOLUTION

ular, and except in extreme cases, such as war, rebellion and famine, was rarely adopted until 1913, when an income tax law was passed. Most of the government's revenue, however, until 1920 was derived from import duties and excise taxes on spirituous liquors, tobacco and other articles of manufacture, particularly luxuries. In that year the nation lost its liquor revenues through the prohibition amendment. In 1917 taxes were levied on many articles not ordinarily taxed, because of the expenses incurred on account of the World War.

The income is usually ample for the needs of the government. Loans are occasionally obtained through the sale of bonds. During the World War five such loans were made, aggregating $19,100,000,000. Four of them were designated as Liberty Loans, and the fifth as the Victory Loan. All were oversubscribed. United States bonds are usually payable after a long period, and while the interest is low, the permanency of the investment and the perfect security offered by the government make them very desirable to capitalists.

The most important items of expenditure are pensions, the postoffice, the army, the navy and the interest on the public debt.

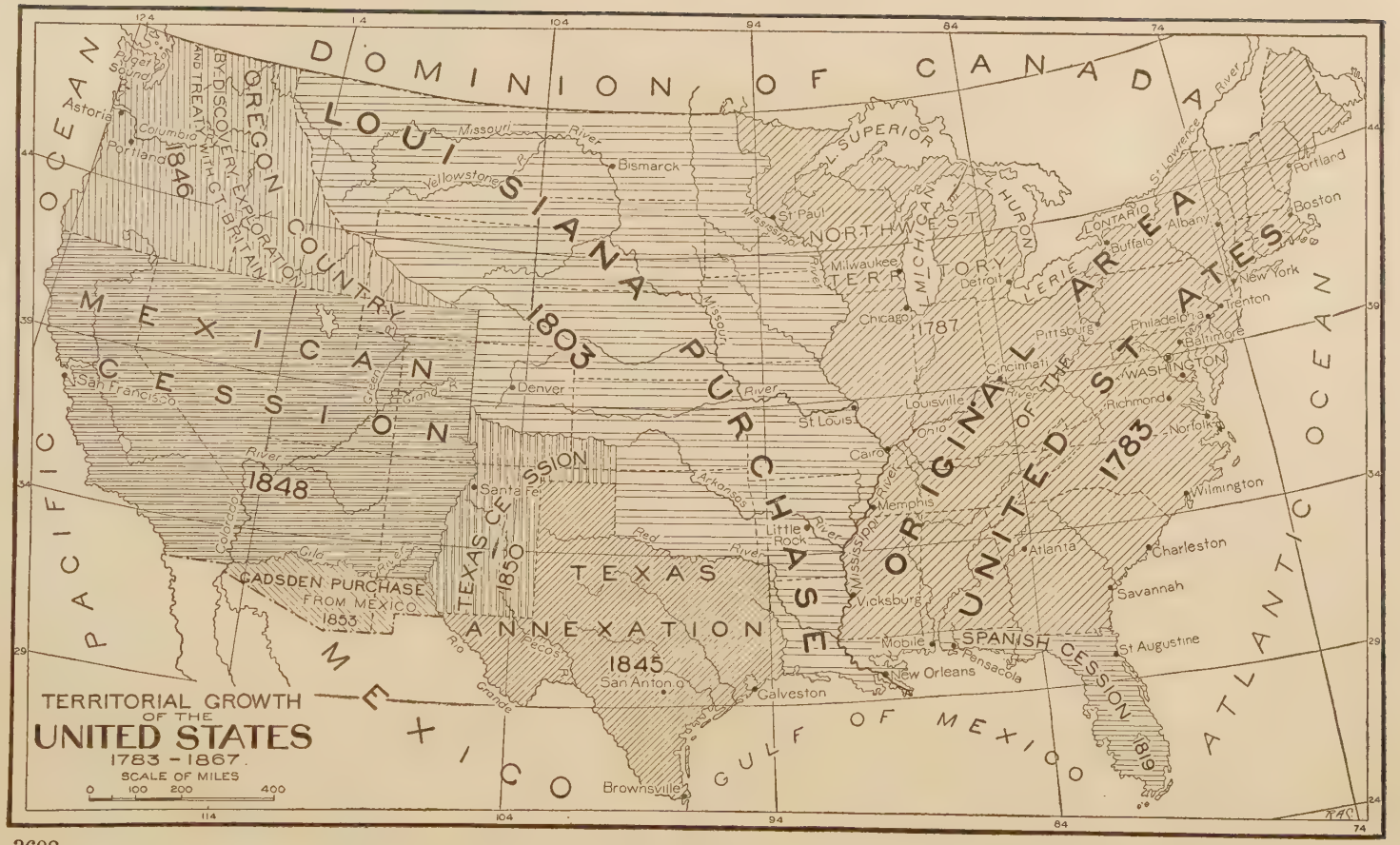
Political Divisions. Within the United States proper there are 48 states and 1 federal district. The external possessions consist of the territories of Alaska and Hawaii; Guam, the Philippines, Tutuila, Porto Rico, the Virgin Islands, formerly the Danish West Indies, and a few other small islands. At the adoption of the Constitution there were thirteen organized states, and these are known as the Original States. The first new state admitted was Vermont, in 1791, and the last were New Mexico and Arizona, which came into the Union in 1912. The outlying possessions are described under their titles. The table given below includes only the states within the United States proper. The figures given are taken from the United States Census of 1910, except populations, which are estimates of 1918. Arizona and New Mexico, the latest additions to the union of states, elect one Representative each.

Territorial Expansion

At the organization of the government, the Mississippi River formed the western boundary of the United States, and the

UNITED STATES IN 1800

area of the country was 828,000 square miles. Only about 300,000 square miles, or a little over one-third of this area, was actually settled. In 1803 the first great addition of


DOMINION OF CANADA
PACIFIC OCEAN
ATLANTIC OCEAN
MEXICO
GULF OF MEXICO
OREGON COUNTRY
BY DISCOVERY, EXPLORATION AND TREATY WITH GT. BRITAIN
1846
LOUISIANA PURCHASE
1803
MEXICAN CESSION
1848
TEXAS CESSION
1850
TEXAS ANNEXATION
1845
GADSDEN PURCHASE FROM MEXICO
1853
ORIGINAL UNITED STATES
1783
NORTHWEST TERRITORY
1787
SPANISH CESSION
1819
Astoria
Portland
Bismarck
Denver
St Louis
Chicago
Detroit
Buffalo
Albany
Boston
New York
Philadelphia
Baltimore
Trenton
WASHINGTON
Richmond
Norfolk
Wilmington
Charleston
Savannah
St Augustine
Atlanta
Memphis
Little Rock
Vicksburg
Mobile
Pensacola
New Orleans
Galveston
San Antonio
Brownsville
San Francisco
Santa Fe
Cairo
Louisville
Cincinnati
Pittsburg
Missouri River
Yellowstone R.
Mississippi River
Ohio River
Arkansas River
Red River
Rio Grande
Pecos R.
Gila River
Colorado R.
St Lawrence River
L. SUPERIOR
MICHIGAN
HURON
ONTARIO
ERIE
TERRITORIAL GROWTH OF THE UNITED STATES 1783 - 1867.
SCALE OF MILES
0 100 200 400

3698

territory was made by the purchase of Louisiana. Sixteen years later, this was followed by the acquisition of Florida. With these accessions of territory, the country was openly committed to the policy of expanding her domains, so that in the admission of Texas and the taking over of the territory ceded by Mexico no new policy was established, except in the method pursued. Thus far all territory acquired had been adjoining the United States, but in 1867 Secretary Seward, in the purchase of Alaska, took a radical step, in acquiring territory somewhat remote from the country. A still more radical step was taken in the annexation of Hawaii and the acquisition of the Philippine Islands and Porto Rico. In 1917 the Danish West Indies were purchased and renamed the Virgin Islands. Each of these possessions is described under its title.

The following table contains data concerning the territory added to the United States:

Territorial Division	Year	Area Added (sq. mi.)	Purchase Price
Louisiana	1803	875,025	$15,000,000
Florida	1819	70,107	5,499,768
Texas	1845	389,795	.....
Oregon Territory	1846	288,689	.....
Mexican Cession	1848	523,802	18,250,000†
Gadsden Purchase	1853	36,211	10,000,000
Alaska	1867	590,884	7,200,000
Hawaiian Islands	1897	6,449	.....
Porto Rico	1898	3,435	.....
Guam	1898	210	.....
Philippine Islands	1898	114,958	20,000,000
Tutuila (Samoa Is.)	1899	77	.....
Additional Philippines	1901	68	100,000
Panama Canal Strip	1904	474	10,000,000*
Virgin Islands	1917	134	25,000,000
Total		2,900,318	$102,039,768
Original Territory		827,844	
Total		3,900,162	

*Besides an annual rental of $250,000.
†This does not include $10,000,000 paid to Texas for territory outside of its present boundaries, but included in the state at the time of annexation.

Education

The United States has no national system of education, in the sense that there is an educational system administered by the Federal government. However, from the time of the Ordinance of 1787, in which certain sections of land in the Northwest Territory were reserved for educational purposes, the national government has assisted very materially in public education, by granting generous portions of the public domain for the support of universities, agricultural colleges and public schools, and in 1917 liberal appropriations were granted for vocational education below college grade. In addition to this it maintains the Bureau of Education, which is a division under the Department of the Interior. The chief officer, called the commissioner of education, collect statistics and publishes a biennial report, containing educational data of national importance. Further than this his duties are advisory only. However, under the able commissioners who have filled the office since the bureau was established, very much has been done to advance the educational interests of the country. The work of the bureau is more fully explained in the article Education, Bureau of.

The administration of the public schools is left to the states, and each maintains its own system of public education. However, these systems so closely resemble one another that, taken together, they practically constitute a national system of education. The articles Common Schools, High Schools, and those on the important universities of the country will furnish additional information.

Art and Literature

For information on American art see the articles Painting and Sculpture. American literature will be found in the article Literature, subhead *American Literature.*

History

Discovery and Exploration. At the time of its discovery by Europeans, America was inhabited by savages belonging to the American, or Red, race. The origin and antiquity of these people and the degree of their civilization are still subjects of investigation and dispute. It is also uncertain at what time and place the American continents were first discovered. Norse seamen are said to have visited the North American coast about A. D. 1000, and it is probable that fishermen from Northern Europe had made voyages across the Atlantic before that date. But even if both these facts were true, the credit for the real discovery of America must still be given to those navigators who, at the close of the fifteenth century, crossed the Atlantic and explored the shores of the "New World."

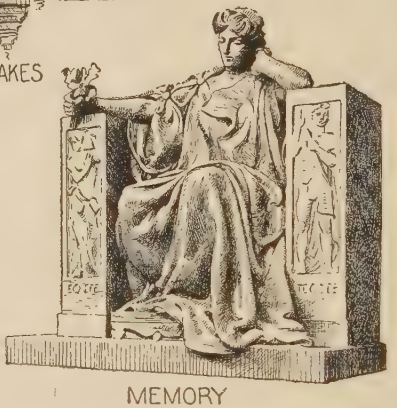
The first of these navigators was Christopher Columbus, who in 1492 discovered the Bahama Islands and on later voyages explored the South and Central American coasts. John and Sebastian Cabot in 1497 and 1498, under the auspices of England, skirted the coast of Labrador and perhaps

THE PURITAN
St. Gaudens

FOUNTAIN OF THE GREAT LAKES
Taft

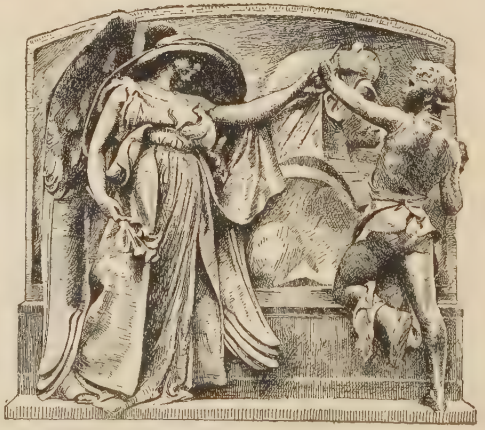
COLUMBUS
Bartlett

TWO NATURES
Barnard



MEMORY
French

ETHAN ALLEN
Mead



DEATH AND THE SCULPTOR. French

GEORGE WASHINGTON
Ward

New England, giving Britain the basis for her claim to the continent of North America. About the same time Americus Vespucius was exploring the coasts of South America, and in his honor America was named. In 1513 Balboa, a Spanish adventurer, discovered the Pacific, and in the same year Ponce de Leon discovered and explored Florida. Verrazano was the first to represent France in this new field, his voyage being made in 1524. Frenchmen and Spaniards then vied for the control of the new-found riches. Narvaez, Coronado and De Soto, in the south, set out to conquer for Spain the vast interior of the North American continent, while in the north, Cartier, and in Florida, Ribaut and the Huguenots attempted to establish the power of France, but without success.

Meantime, English enterprise had been dormant, but with the advent of Queen Elizabeth to the throne, in 1558, a group of distinguished mariners became anxious to extend English influence in the New World. Of these, Sir John Hawkins, Sir Francis Drake, Sir Humphrey Gilbert and Sir Walter Raleigh were the most important, but they accomplished little of permanent value. It was not till the opening of the seventeenth century that real progress was made toward subduing and colonizing America. At that time, France, under the leadership of such brilliant men as Champlain, Marquette, Joliet and La Salle, extended her influence throughout the region of Canada and into the Mississippi and Ohio valleys, establishing fur-trading posts throughout this territory. In 1565 Spain established a settlement at Saint Augustine, Florida, and made feeble efforts to extend her authority northward, but with little success.

Colonization. A detailed account of the development of each of the colonies, is given in articles upon the several states and also upon the leading discoveries and explorers of the period.

English Colonies. The chief fact in American history during the seventeenth century is the settlement of English colonies along the Atlantic coast. This was begun in 1607 at Jamestown, Virginia, under the auspices of the London Company, a trading and colonizing corporation similar to the East India Company. This colony was in large measure a commercial and political enterprise, and its settlers were drawn from all classes, but especially from the wealthy and the adventurous. During its early life Jamestown witnessed some of the most important episodes of American history, among them the establishment of the first representative assembly in America (1619), and the institution of negro slavery (1619).

The second English settlement was at Plymouth, Massachusetts, in 1620, and was made by men who had fled from England to avoid religious persecution. In 1628 a settlement was made at Salem by English Puritans. This, too, was a religious movement. The early history of Plymouth and Salem, the latter called Massachusetts Bay Colony, was somewhat troubled. The colonists early manifested a desire for self-government, which led to bitter contests with the king, but at the same time brought about important progress toward political and religious liberty. However, in 1636 Roger Williams was exiled for his religious belief, and in 1651 a bitter persecution of the Quakers began in Boston. Meantime, Harvard College had been founded in 1638, and the first printing press had been set up in 1639.

The success of the early colonies led to other enterprises, and settlements in New Hampshire and Maine resulted. But even the freedom which was nominally established in Massachusetts did not satisfy that community, and in 1633 bodies of settlers from the coast began to travel inland and found settlements along the Connecticut River. These developed into the Colony of Connecticut, which in 1637 adopted the first written constitution in America, known as the "Fundamental Orders of Connecticut." New Haven was settled in this year and was united with Connecticut in 1682. Maryland was organized as a proprietary colony, under the Lords Baltimore, and its first settlement was at Saint Mary's, the original purpose being to found a haven of refuge for English Catholics. The territory of the Carolinas was first settled by Virginians, but in 1663 it was granted to eight English noblemen, who divided it into two colonies, which were again united in 1699, but governed separately after 1729.

Pennsylvania was a Quaker proprietary colony, founded by William Penn, Jr., in 1676 and colonized six years later. Its government was organized on an extremely liberal basis and exerted a powerful influence upon other American colonies. The settlement of Rhode Island was the outgrowth of

the religious persecution in Massachusetts, being founded by two exiles, Roger Williams and Anne Hutchinson, the former settling at Providence, the latter at Portsmouth.

They eventually united their forces. Georgia was the last of the thirteen colonies to be settled; it was founded by James Oglethorpe in 1732, as a refuge for honest debtors. A village was settled at Savannah in the following year.

Other Colonies. New Jersey was first colonized by the Dutch at Fort Nassau, now Gloucester. This was subsequently conquered by the Swedes, restored to the Dutch in 1655 and finally transferred to the English in 1664, becoming a proprietary province under Lord Berkeley and Sir George Carteret. The Dutch were also the first to establish colonies within the territory of New York, by reason of the voyage of Henry Hudson in 1609. Albany was settled in 1624, and New Amsterdam (New York), two years later. The colony was conquered by the English in 1664. Delaware was long a fighting ground between the Dutch and the Swedes, the latter finally being compelled to relinquish their claim; but the English conquered in 1664.

Colonial Development. During the seventeenth century the scattering colonies of all the nations steadily advanced in strength and constantly extended their borders, until the Atlantic coast from Labrador to Mexico was dotted with prosperous villages and trading centers. During the first half of the eighteenth century, the interests of France and England began to come into conflict, as each attempted to extend its dominion over the fertile interior of the continent. This resulted in a series of wars, known, collectively, as the French and Indian wars, extending with but slight interruptions from 1689 to 1763. This long conflict had three great results from the standpoint of the colonies: (1) It practically drove France from America and decided that American Institutions should be organized chiefly upon British models; (2) it gave the colonists military experience and a feeling of independent power, which made them more willing to stand firmly for their rights against the mother country; (3) it disclosed the necessity for intercolonial union.

During this same time the colonies were developing politically and were manifesting more and more clearly their determination to govern themselves, at least in all local affairs.

The Development of Union. From the earliest times events in America had shaped themselves to the end that the colonies should become not independent units, but parts of a general system. By the middle of the eigthteenth century the necessity of such a result had become more evident, only because in the meantime minor issues of a local nature had been decided, and because recent events, in which all the colonies were united, had disclosed to the colonists their common interests and ideals. This development of the spirit of union culminated in 1754 in a congress, held at Albany for the purpose of framing a treaty of friendship with the Indians, and also of devising a plan for the union of all the colonies. The latter plan, prepared by Franklin, was adopted by the convention, but it was rejected by every colony and by the mother country. The reasons for its rejection disclosed a state of affairs which found its natural conclusion in the Revolutionary War. Says Franklin, "The Assembly did not adopt it, as they all thought there was too much *prerogative* in it, and in England, it was judged to have too much of the *democratic*." Thus the issue was clearly drawn between England and the colonies; the former was set resolutely against the growing spirit of independence and democracy in America; the latter were determined to prevent interference in their affairs.

Revolutionary War. *Causes and Beginnings.* The fundamental cause of the Revolutionary War had both economic and political phases. It was laid in the theory of colonization held by every important country in the world at that time, namely, that colonies existed for the mother country and that they had no political or commercial rights except those specifically granted to them. This principle probably would not have been contested, if the tendency of all governments, and especially of England, had not been to repress the growing strength of their colonies and thus to cause distressing economic conditions, which the colonists themselves had no power to remedy.

This led to the demand for political self-government, which, when refused, roused a spirit of resistance and, finally, of revolution. This end was hastened by the passage of more and more repressive legislation, such as the enlargement of the Navigation Acts (which see), the establishment of British garrisons in America and the taxation of the colonies to

BRITISH POSSESSIONS
SPANISH POSSESSIONS
VIRGINIA
MASS. AND
MASS. AND VA.
CONNECTICUT (AND VA.)
MASS. AND N.Y.
NEW YORK
OSWEGO
VERMONT
CONN. CLAIM
N.H.
MASS.
PORTSMOUTH
BOSTON
NANTUCKET
R.I.
NEW HAVEN
NEW YORK
TRENTON
WYOMING
PENNSYLVANIA
PITTSBURG
Reading
Philadelphia
MARYLAND
DELAWARE
VIRGINIA
ST. LOUIS
KASKASKIA
VINCENNES
LOUISVILLE
RICHMOND
NORFOLK
MISSISSIPPI RIVER
N. CAROLINA
HILLSBORO
RALEIGH
S. CAROLINA
GEORGIA
CHARLESTON
SAVANNAH
FLORIDA
HMH
LAND CLAIMS
OF THE
THIRTEEN ORIGINAL STATES

support these garrisons. To enforce the second policy, a stamp tax was inaugurated, which gave to every colonist a grievance and awakened the famous cry, "Taxation without representation is tyranny." The act repealing the Stamp Act was accompanied by a declaration that the Crown had the right to tax the Colonies, and thus it was of little benefit in appeasing the wrath of the Americans. When followed by the Townshend Acts the situation became serious and culminated in open violence in Boston, during which British soldiers in Boston killed a number of citizens.

It soon became evident to the leading men in the colonies that little was to be expected in the direction of conciliation, and an effort was made to unite the colonies more firmly in opposition to the mother country. One of the important means to this end was the formation of committees of correspondence, which kept the different colonies informed of the march of events throughout the country. The spirit of defiance became more widespread, as was indicated by the destruction of the *Gaspee,* a British man-of-war, stationed near Rhode Island to prevent violation of the customs laws, and by the Boston Tea Party. To punish this lawlessness, the British government passed, and attempted to enforce, laws clearly violating the English constitution, and striking at rights especially dear to the colonists. Among these were the Boston Port Bill, closing the port of Boston to all commerce, and acts allowing the trial in England of certain official offenders, permitting the quartering of soldiers upon the colonies and abolishing certain provisions of their charters. To enforce these laws, General Gage and a force of soldiers were sent to Massachusetts.

The colonies were thoroughly aroused, and in reply to a request of the Massachusetts assembly, they sent delegates to a congress at Philadelphia, September 1, 1774. This body, known as the First Continental Congress, passed resolutions of protest against the British policy and agreed not to import goods from England, then adjourned, to reassemble May 1, 1775. Their petition to Parliament was answered by still more oppressive acts; and before the second Congress met, the American cause had gone beyond the stage of discussion or compromise. The colonies, led by Massachusetts, collected military forces and supplies, and when General Gage attempted to seize the stores at Lexington and Concord, and to arrest Samuel Adams and John Hancock, his force was met by a body of minutemen, drawn up on Lexington Common. In the battle which followed the first blood in the Revolutionary War was shed. The government of the colonies was soon taken over by the patriots and, guided and inspired by the Second Continental Congress, measures of increasing defiance and independence were taken from time to time. (See articles upon the Revolutionary War in America and the decisive battles, for brief outlines of the chief military campaigns; see also articles upon the great statesmen and soldiers of the period.)

Results of the War. At the opening of the struggle the people of the country were not united in the conviction that political independence of Great Britain was the end to be desired. They were still loyal to the mother country and were determined to fight to regain their rights as Englishmen. But the passage of events and the necessary assumption of the ordinary functions of government by Congress and the provisional governments of the colonies, brought the question of independence prominently forward and finally caused independence to be proclaimed. Meanwhile, foreign relations had been established by the appointment of a committee to correspond with foreign governments, and this resulted, in February, 1778, in the signing of a treaty of alliance with France. This treaty is generally considered the turning-point of the war, since it led to such active support by France that England was eventually compelled to make peace, the treaty being signed at Paris, September 3, 1783.

Articles of Confederation. The financial and internal affairs of the colonies were in a far from satisfactory state. The Continental Congress had assumed only the absolutely necessary functions and had no legal power to compel obedience to its decrees. Appreciating the importance of forming a stronger government to replace that which was being destroyed by the Revolution, Congress appointed a committee in the summer of 1776, to draw up articles for the confederation of the thirteen colonies. These articles, though a vast improvement over the organization which had previously existed, left much to be desired, since the same spirit

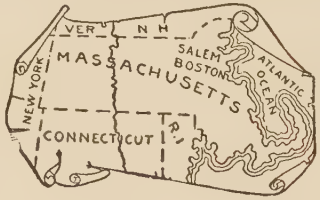
MASSACHUSETTS

PLYMOUTH ROCK

"What sought they thus afar?
Bright jewels of the mine?
The wealth of seas? the spoils of war
They sought a faith's pure shrine."

Outline.

Time - Dec. 21, 1620.
Place - Plymouth.
Why so named?
People - Pilgrims
Leaders - Bradford - Carver.
Character - Industrious
Wanderings.
Number - 102.
No. of families - 19.
Suffering
Object - Religious freedom.
Ship - Mayflower
No. of houses - 20.
Governors - Carver - Bradford.
First Thanksgiving.
Growth - Very slow
Independence



ELM TREE

SALEM WITCHCRAFT

Time - 1692.
Place - Salem, Mass.
Causes
Below possessed of the Devil.
Sell themselves to do his bidding.
Events
Prisons filled.
Fifty-five tortured into confessions!
Twenty put to death
Results
Showed the superstition of the times!
Decreased the spirit of intolerance!

PILGRIM MONUMENT

HUB OF THE UNIVERSE

MAY-FLOWER

PINE TREE SHILLING

FANEUIL HALL
"CRADLE OF LIBERTY"

Roach

HOW THE HISTORY OF A COLONY MAY BE ILLUSTRATED FOR STUDY

which had led the colonists to resist the encroachments of British power led them to fear the establishment of a strong power among themselves. The articles therefore provided for no executive head of the government, leaving all power with Congress, which could pass laws only with the consent of the representatives of nine states, a majority of the representatives of each state being necessary to cast its vote.

In spite of the apparent weakness of the government which was thus created, state jealousies prevented the adoption of the articles until almost the close of the war, in 1781. Meantime, the financial affairs of the government as a whole and of the several colonies had come to a serious state, since all the governments had been compelled to borrow vast sums of money and, besides, had issued paper notes in payment of debts. This paper money, coming from many sources without adequate security, rapidly depreciated in value, until at the close of the war it was practically worthless. The department of war was in a similarly disorganized state.

Adoption of the Constitution. Soon after the adoption of the Articles of Confederation a large faction in the states demanded that a stronger government be immediately organized, but it was several years before they were able to win public sentiment to their view. Finally, in 1786, a convention was proposed by several states, for the purpose of amending the Articles, in order to increase the power of the central government. This convention met in May, 1787, at Philadelphia, and contained in its membership the most able and distinguished statesmen in America, including George Washington, Alexander Hamilton, James Madison, Gouverneur Morris, Robert Morris, Roger Sherman and others. Its sessions were turbulent, owing to the presence of a strong minority party, who feared the centralization of authority, and it was only through compromise that the Constitution was finally produced and accepted. In its completed form it did not satisfy either party, and the discussion which had taken place in the convention was carried before the people in the contest for ratification. Through the efforts of Jay, Hamilton, Madison, Henry Lee, George Washington and others, it was finally adopted, however, being recognized as the most satisfactory constitution which could at that time be made.

Before its final adjournment, the old Congress of the Confederation performed its most notable work, in passing the famous Ordinance of 1787, for the government of the Northwest Territory.

Organization of the National Government. After the ratification of the Constitution by nine states, Congress proceeded to plan for the organization of the new government. The election, held in January, 1789, resulted in the unanimous choice of George Washington for President; John Adams, having the next highest number of votes, was made Vice-President. The inauguration of the government was delayed until April 30, 1789. Washington took the oath of office at New York, where the first national Congress was assembled.

This body already showed a tendency toward division. The Federalists, that is, those who had advocated the ratification of the Constitution, were opposed by the old Anti-Federalists, now styling themselves Democratic-Republicans, or Republicans, who desired the strict interpretation of the Constitution and a tendency toward decentralization of power. Washington chose for his advisers representatives of both of these factions, Hamilton being the acknowledged leader of the former, and Jefferson, of the latter. Hamilton became Secretary of the Treasury, and the first important action of the new government was the carrying into effect of principles suggested by him for the management of the finances of the country. These included the inauguration of the tariff duties; the establishment of a national bank; the assumption of debts contracted by the states during the Revolution; the institution of the excise tax; the establishment of a national mint, and a system of coinage. All of these measures aroused the greatest opposition, but all were passed, and all soon proved their value and efficacy. Washington set himself to organize the executive departments of the government, and he established precedents which have ever since been followed. During his first term, also, the judicial system was organized, and the first ten amendments to the Federal Constitution were adopted.

In spite of his opposition, Washington was nominated and reëlected unanimously in 1793. Adams was also reëlected Vice-President, but was opposed by George Clinton of New York, a Republican. The most important matter connected with Washington's

second administration was the relation of the government to foreign nations, especially England and France. The Federalists sympathized with England, and the Republicans sympathized with France, in the war which had begun between them. The visit of Citizen Genet, Washington's refusal to recognize him and the later proclamation of neutrality, together with the signing of the very unsatisfactory treaty with England, known as the Jay Treaty, and the refusal of England to evacuate its posts in the Northwest Territory or to grant privileges to American commerce, all led to serious domestic disturbances and almost to war; but such an event was averted by Washington's tact and frankness. His second administration was also important for the suppression of the first rebellion against the government, the Whisky Insurrection in Pennsylvania; for the unsuccessful expedition of Saint Clair against the Indians and the successful expedition of General Wayne, resulting in the cession of a large tract of land by the Indians to the United States. A treaty was negotiated with Spain, by which the United States secured the free navigation of the Mississippi. In 1793 Eli Whitney invented the cotton gin, which was to be of greater political importance during the next century than any other single invention of history.

Washington positively refused to accept a third term as President, delivered a famous farewell address and retired to Mount Vernon. He was succeeded by John Adams, a Federalist, who received 71 votes, in opposition to Thomas Jefferson, a Republican, who received but 68. Adams' administration was at first highly popular, on account of the firm stand which it took against the insolent actions of France, but the passage in 1798 of the Alien and Sedition acts not only forfeited the popularity of the party, but led to its overthrow. The famous Kentucky and Virginia resolutions were passed at this time in relation to these laws. The seat of government was changed in 1800 from Philadelphia to Washington. Doubtless the most important appointment of Adams' administration was that of John Marshall to be Chief Justice of the United States Supreme Court.

At the election in 1800, Adams was defeated, but the two Republican candidates, Jefferson and Burr, had an equal number of electoral votes. The House of Representatives elected Jefferson after a long contest.

Supremacy of the Anti-Federalists. The ascendency of the Anti-Federalists marks an important change in American politics. At the close of the Revolutionary War there was a notable reaction from the extreme ideas of liberty which that struggle had expressed, and the Constitution placed far more power in the central government than pleased many of the more radical Democrats in the country. But after Adams' administration, another reaction set in, away from centralization, toward democracy. In spite of his theories of strict construction, Jefferson soon was compelled to take steps involving broader powers than either of his Federalist predecessors had assumed. First was the purchase of Louisiana in 1803, the constitutionality of which even he himself doubted. On the other hand, he attempted to reduce the importance of the national government by making but small appropriations for the army and navy; but he was compelled to abandon even this policy when a war with the Barbary powers broke out in 1801. During his first term the Twelfth Amendment to the Constitution was passed, changing the method of voting for President and Vice-President.

Jefferson was reëlected in 1804, with George Clinton of New York as Vice-President. The most important problem which confronted him during his second administration was the relation of the United States to the commercial war between France and England. He attempted to establish in law his theory that the United States could compel Europe to consider its rights by shutting American ports to the commerce of European nations. This was the cause of the Embargo Act of December, 1807, forbidding American vessels to leave for foreign ports (see EMBARGO). However, this measure did not accomplish its intended purpose, but instead it seriously injured American commerce. The relations between the United States and Great Britain became more and more strained, because of the persistent attempts of British vessels to impress seamen from American ships. This resulted in several small battles. During Jefferson's administration, also, Aaron Burr attempted to separate the western states from the Union; Lewis and Clark made their famous expedition to the Pacific coast (see LEWIS AND CLARK EXPEDITION); the Cumberland Road was authorized and begun; West Point Military Academy was established; Fulton succeeded in constructing the

first successful steamboat, and the slave trade was abolished after 1808.

Jefferson declined a third election and was succeeded by his Secretary of State, James Madison, who defeated Charles C. Pinckney. The Embargo Act was replaced by the Non-Intercourse Act, before Madison's inauguration, but this did not relieve matters greatly. Madison attempted to carry out Jefferson's policy, but was finally compelled to take more stern measures, and the War of 1812 resulted. Meantime, Madison was reëlected, with Elbridge Gerry as Vice-President, defeating De Witt Clinton. The war was vigorously opposed by the Federalists, especially of New England, and they held a convention at Hartford, in December, 1814, which, it was rumored, threatened secession; but this movement did not gain sufficient strength to be a serious menace to the country. The treaty of peace was signed at Ghent, December 24, 1814.

The end of the war marked, also, the practical end of the Federalist party as an organization, for its unpatriotic stand during the war had won for it the derision of people in all parts of the country. However, the Anti-Federalist party had meantime so changed its position upon constitutional questions that many of the Federalist principles were already firmly incorporated in the government. During Madison's term, laws were passed granting a second charter to the United States Bank, establishing a protective tariff and appropriating large sums for internal improvements, all measures which the Anti-Federalists had formerly opposed. The Supreme Court, under Marshall's leadership, had also taken firm ground in favor of a strong national government.

The Era of Good Feeling. In 1816 James Monroe of Virginia, Madison's Secretary of State, was elected President, receiving the votes of all the states except Massachusetts, Connecticut and Delaware, which were cast for Rufus King of New York. Since the downfall of the Federalist party had removed many questions from controversy, Monroe's administrations are sometimes known as the "Era of Good Feeling;" but, in fact, just as sincere debate was carried on during this time as at any time before or after, the main questions being the tariff and the admission of Missouri, the latter of which involved the discussion of the rising issue of slavery. Monroe was reëlected in 1820, receiving all the electoral votes but one, which was cast for John Quincy Adams. The most important incident of his second administration was the promulgation of the Monroe Doctrine. In 1824 a higher protective tariff was passed. The election of 1824 turned upon personal questions and resulted in a contest between Andrew Jackson, John Quincy Adams, William H. Crawford and Henry Clay, the House of Representatives finally electing John Quincy Adams.

Rise of the Whigs. This election marks another change in the political history of the United States. The Republican, or Democratic-Republican, party at this time took the name of Democratic, which it has since retained, and the Clay and Adams factions, consisting of the loose constructionists of the old party, took the name of National Republican, which eventually was changed to Whig. Adams' administration was marked by a long controversy between his followers and those of Jackson, who claimed that they had been deprived of the election by a corrupt compact between Adams and Clay. This helped to defeat the Adams faction in 1828 and to elect Jackson. The most important event of this period was the passage of the Tariff of Abominations of 1828, which led to the nullification controversy in the following administration. Adams' term also saw the extension of the policy of internal improvements at the expense of the national government, and the beginning of a vast immigration into the West.

Democracy Again in Power. Jackson was elected in 1828 by a vote of 178 to 83, with John C. Calhoun as Vice-President. This election marks the return of the radical Democratic party to power. The chief contests of Jackson's term were over the United States Bank and the tariff, the former being refused a continuance of its charter and the latter resulting in the nullification episode, which was firmly handled by President Jackson, secession being prevented by a compromise bill introduced by Henry Clay. During this controversy the famous debate between Daniel Webster and Robert Y. Hayne occurred. Jackson was reëlected in 1832 over Henry Clay, John Floyd and William Wirt, and Martin Van Buren was chosen Vice-President. His second administration was marked by Indian disturbances, in the South with the Cherokee and Seminole, and in the West with the Sacs and Foxes under Black Hawk.

The Senate took firm ground against the President, especially for his attitude toward the national bank, and this contest was bitter throughout his term. The question of the independence or annexation of Texas also arose during Jackson's second term and signalized the increasing importance of the slavery controversy, the Texas question resolving itself into a contest upon the part of the South for the extension of slavery territory, and resistance to this policy by the North. The first anti-slavery societies date from this time. President Jackson's terms were also notable for the first important contest over the spoils system, which he had introduced into the national government.

Jackson was succeeded by his follower, Martin Van Buren, who defeated the Whig candidate, William Henry Harrison of Indiana. Richard M. Johnson was elected Vice-President. The first year of Van Buren's term was marked by a terrible financial panic, which caused the failure of many banks and corporations and produced great suffering among the people. Van Buren continued the hostility of the Democratic party to the establishment of a national bank and replaced that institution by a system known as the independent treasury. Van Buren's plan, with modifications, has continued to the present.

A Whig Triumph. The financial depression and other issues led to the election of the popular Whig candidate, William Henry Harrison, in 1840, after a memorable campaign, known to history as the "log cabin and hard cider campaign." The anti-slavery party at this election for the first time nominated independent candidates, James G. Birney being the candidate of the Liberty party. Harrison died shortly after his inauguration, and was succeeded by John Tyler, formerly a Democrat. He immediately came into conflict with Congress over the proposed reestablishment of the national bank, and he vetoed two bills drawn to that end. The controversy became so heated that all of Tyler's Cabinet except Webster resigned, he remaining merely to complete the negotiation of the famous Webster-Ashburton Treaty, which fixed the northeastern boundary between the United States and Canada.

In 1843 President Tyler arranged a treaty with the Republic of Texas, providing for the future annexation of that country to the United States, but it was rejected by the Senate. The Texas question became the leading issue in the following campaign, however, which resulted in the election of James K. Polk, the Democratic candidate, over Henry Clay, the Whig, and James G. Birney, the candidate of the Liberty party. Before Tyler left office Congress had approved a resolution for the annexation of Texas.

Texas and the Mexican War. The administration of President Polk was chiefly notable for the precipitation of the Mexican War, as a result of his order to the United States troops under General Taylor to take possession of territory claimed by both Texas and Mexico. Texas was admitted as a state in June, 1845. The war resulted in an easy victory for the United States and by the treaty of Guadalupe Hidalgo the United States territory was greatly extended. The war is described in the article MEXICAN WAR.

The dispute over the territory of Oregon was also an issue in the campaign in 1844 and was settled by a treaty with England in 1846. During Polk's administration, the Walker tariff of 1846 was passed; it was a return to the principle of tariff for revenue only. The independent treasury was also firmly established. The slavery question again cropped out over the extension of the institution to the territory acquired from Mexico and in the formation of the Free-Soil party. Gold was discovered in California in 1848 and resulted in a vast immigration to that region.

The Liberty party had been fused with the Free-Soil party, and in 1848 it nominated Martin Van Buren as its candidate for President, against Lewis Cass, the Democratic nominee, and General Zachary Taylor, the Whig nominee. Taylor was elected, with Millard Fillmore as Vice-President.

Downfall of the Whigs. In spite of its triumph at this election, the Whig party soon showed signs of disintegration, being absorbed in part by the Free-Soil movement, which later took form in the Republican party. Meantime, the Democratic party came under the control of its pro-slavery faction, and the slavery issue was therefore brought to a crisis. For a time in 1850 the controversy seemed to be allayed through the compromise measures, which admitted California as a free state, but gave the South numerous concessions, in the form of the Fugitive Slave Law and the organization of New Mexico and Utah with the right to admit or prohibit slavery as they chose.

President Taylor died before the passage of these acts, and Millard Fillmore succeeded to the Presidency. The most important event of his administration was the signing of the Clayton-Bulwer Treaty, regarding the interoceanic canal. In the election of 1852 the Democrats were successful, Franklin Pierce of New Hampshire becoming President, and William R. King of Alabama, Vice-President. The Whig nominees were General Winfield Scott and William A Graham. The Free-Soil party nominated John P. Hale of New Hampshire and George W. Julian.

Slavery. In spite of the apparent cessation of the slavery controversy, the struggle soon revived over the organization of the territories of Kansas and Nebraska, and the doctrine proposed by Stephen A. Douglas for the regulation of these territories, known as "squatter sovereignty" (which see). This contest marked the final dissolution of the Whig party, most of the Southern members joining with the Democrats in favor of the extension of slavery, the Northerners, together with other anti-slavery factions, uniting to form the Republican party. During this time a fierce struggle for the possession of Kansas ensued between the anti-slavery and pro-slavery factions (see KANSAS, subhead *History*). It was during Pierce's administration that Commodore Perry negotiated his treaty with Japan.

The election of 1856 again resulted in a Democratic success, James Buchanan being elected President and John C. Breckinridge Vice-President, over John C. Fremont and William L. Dayton, the Republican candidates, and Millard Fillmore and A. J. Donelson, the nominees of a new party, known as the Know-Nothings or American party. It was during Buchanan's administration that the slavery struggle came to a head. It witnessed the Supreme Court decision in the Dred Scott case, declaring that Congress had no right to prohibit slavery in the territories; the attempts upon the part of Southern statesmen to gain possession of Cuba, for the extension of slavery, and the continuation of the bitter struggle in Kansas, which resulted, in the succeeding administration, in the admission of Kansas as a free state. In 1859 occurred John Brown's raid at Harper's Ferry, which roused the most bitter antagonism in the South. The Democratic party was now practically divided, and two sets of candidates were nominated, one by the Northern wing and the other by the Southern wing. The former was Stephen A. Douglas, of Illinois, and Herschel V. Johnson, of Georgia; the latter, John C. Breckinridge, of Kentucky, and Joseph Lane, of Oregon. The Republicans nominated Abraham Lincoln, of Illinois, and Hannibal Hamlin, of Maine, while a third party, the successor of the American party, now known as the Constitutional Union party, nominated John Bell, of Tennessee, and Edward Everett, of Massachusetts. Lincoln was elected by a comparatively small plurality and by far less than a majority of the popular vote.

Secession. The election of Lincoln was the signal for the South to take measures to overcome the overwhelming opposition to them in the United States government, and it resulted in the secession of South Carolina on December 20, 1860. Mississippi, Florida, Alabama, Georgia, Louisiana, Texas, Virginia, Arkansas, North Carolina and Tennessee followed within the next six months, and a new nation, known as the Confederate States of America, was organized at Montgomery, Ala., in February, 1861. President Buchanan opposed secession, but denied his right to coerce the seceding states to return to the Union, and therefore he made little effort to protect government property in the South, which was being taken over as rapidly as possible by the seceding states. Efforts at compromise were made during Buchanan's administration, but without effect. A resolution introduced into the Senate by Senator Crittenden proposed to divide the Union into a slave country and a free country.

Civil War. In his inaugural address President Lincoln urged all sections and classes to come to the support of the government, but expressed his determination to prevent secession. Accordingly, he soon called for volunteers. The Confederate government also called for volunteers and retaliated for Lincoln's proclamation of a blockade by licensing privateers to prey upon Northern commerce. The war began with the bombardment of Fort Sumter on April 14, and its surrender. In April, 1862, Congress purchased and emancipated all slaves in the District of Columbia; two months later it abolished slavery throughout the territories and the public domain, and on January 1, 1863, President Lincoln issued his famous Emancipation Proclamation, which he had announced in the previous September, after the Battle of An-

tietam. This proclamation set free all the slaves in states then in rebellion against the United States.

During the war the President did not have the undivided support of the North. His suspension of the writ of habeas corpus, the suppression of newspapers and of public gatherings, the Conscription Act of 1863 and the apparent failure of the Union armies in the field during the early years of the war, all led to serious opposition and criticism. The financial problems of the war also necessitated taxes and other extraordinary measures, which became exceedingly unpopular. However in the election of 1864 the Democratic party, in spite of the nomination of a popular general, George B. McClellan, was defeated, on a platform which declared that the war was a failure, and Lincoln was triumphantly reëlected. West Virginia, which had been separated from the old State of Virginia, soon after the beginning of the struggle, was admitted to the Union in December, 1862. The war practically came to a close on the surrender of General Lee in April, 1865, but the rejoicing which that event caused was soon overshadowed by universal sorrow at the assassination of President Lincoln, April 14. For a full account of the war, see the article CIVIL WAR IN AMERICA. See, also, articles on the important battles and the leading statesmen and military leaders of the period.

Reconstruction. The problems which the close of the war would bring were anticipated by Lincoln and by Congress, and steps were taken as early as 1863 to provide for the return of the seceded states to the Union and the reëstablishment of loyal state governments. President Johnson, who acceded to the presidency at the death of Lincoln, carried out as far as possible his predecessor's lenient policy of reconstruction, but in so doing he won the enmity of Congress and was impeached, being saved from conviction by a single vote. Meantime, Congress had passed the Thirteenth Amendment, abolishing slavery, and it had been ratified in December, 1865. It had also passed other laws, placing the Southern states in the position of conquered provinces. In 1868, Arkansas, Alabama, Florida, North and South Carolina, Georgia and Louisiana were readmitted to the Union.

The election of 1868 placed General U. S. Grant in the President's chair, with Schuyler Colfax of Indiana, as Vice-President. The Democratic candidates were Horatio Seymour of New York, and Francis P. Blair, Jr., of Missouri. Before Grant's inauguration, the Fourteenth and Fifteenth Amendments to the Constitution had been passed, granting suffrage to the negroes. The latter was ratified in March, 1870.

The most important event of Grant's first term was the settlement of the Alabama claims, which were claims of the United States against England for American ships destroyed by the *Alabama,* a Confederate privateer that was fitted out in England. The award was favorable to the United States. The Union Pacific Railroad was completed, giving the country its first transcontinental railway, but the construction was accompanied by a stock deal which involved several members of Congress and the Vice-President in a notorious scandal, fully described in the article CREDIT MOBILIER OF AMERICA.

The reconstruction policy of Congress led to serious difficulties in the South, which the President sought to remove, but with only partial success. Irresponsible demagogues from the North secured appointment to offices in the South, and were thus placed in positions which they were nowise qualified to fill. Their chief aim seemed to be to reap all possible benefit for themselves and then to leave the country when they could no longer hold office. They were styled *carpetbaggers,* because it was alleged that they could carry all their personal effects in a carpetbag.

This carpetbag régime and other abuses led to the formation of a secret organization among the men of the South, known as the *Ku-Klux Klan,* whose chief purpose was to resist the carpetbaggers and to prevent the execution of their orders. A fuller account of these events will be found in the articles RECONSTRUCTION and IMPEACHMENT, and in the articles on the various Southern states under the subhead *History.*

The Credit Mobilier scandal led to a demand for a reform in the civil service, which was made an important issue in the succeeding campaign. This issue, with that of reconstruction and the tendency of the Republicans to centralize power, led to the formation of a new party, the Liberal Republican party, whose candidates, Horace Greely and B. Gratz Brown, were endorsed by the Democratic convention. However, General Grant

was reëlected, with Henry Wilson of Massachusetts as Vice-President, Greeley having died before the count of the electoral votes. In the same election the Prohibition party and a labor reform party first appeared.

Grant's second term was troublesome. Soon after his reëlection he was confronted by a difficulty with Spain. A Spanish warship seized the American merchantman *Virginius,* which was carrying munitions and other supplies to the rebels in Cuba. Four Cubans who were on the vessel, the captain and thirty-six of the crew, were executed by orders of the Spanish authorities. The affair came near leading the country into war with Spain, but it was finally settled by diplomacy. Another difficulty was caused by the alliance of several Federal revenue collectors with distillers for the purpose of defrauding the government of the excise tax on whisky. This *Whisky Ring,* as the combination was called, had influential friends in the Treasury Department at Washington, and it was a long time before the loss of revenue could be located. The "ring" was finally exposed, the officials implicated were dismissed from office and the distillers were prosecuted and convicted, but most of the prominent ones were pardoned. There was a controversy over the resumption of specie payments and a disastrous financial panic in 1873. Indian troubles culminated in a war with the Modocs and Sioux, during which General Custer and his entire force were massacred.

In 1876 the Centennial Exposition was held in Philadelphia to commemorate the first century of the nation's independence. It was the first great international exposition held in America, and all the leading nations of the world were represented.

Industrial and Economic Progress. Discontent with Grant's administration increased. The Democrats gained a majority in Congress and made a hard fight for the election of 1876. Their candidate, Samuel J. Tilden, received a majority of the popular vote, but was defeated by one electoral vote, as a result of an investigation by a specially constituted electoral commission, which considered the disputed returns from several states. The successful candidate, President Hayes, immediately withdrew United States troops from the South and thus paved the way for a return of good feeling between the two sections. His term was also notable for the rise of a party representing the laboring classes, which demanded a bimetallic standard of money, the suppression of national bank notes, the institution of an income tax and the prohibition of Chinese immigration. This party became known as the Greenback party. In 1878 the Bland-Allison Bill, which required the government to purchase not less than $2,000,000 nor more than $4,000,000 of silver per month, was passed, and in the following year specie payments were resumed. In 1880 within the Republican party arose a fierce contest for control between the followers of Ulysses S. Grant who demanded for him a third term, and those of James G. Blaine and John Sherman. James A. Garfield, of Ohio, a compromise candidate, was finally chosen, however, and was victorious over General Winfield S. Hancock, the Democratic nominee, and James B. Weaver, the Greenback-Labor candidate.

The early part of Garfield's administration was marked by the continuation of the party contest and by the disclosure of frauds in the postal service. President Garfield was assassinated in July, 1881, and died in the following September, Chester A. Arthur becoming President. During his administration the Edmunds law against polygamy was passed; also a bill suspending Chinese immigration for ten years. Civil service reform was forced to the front by the Democratic party, and in 1884 their nominee, Grover Cleveland, of New York, was elected over James G. Blaine by a small popular plurality. The election disclosed an independent movement in the Republican party, which was led by some of the most prominent Republicans in the country. Benjamin F. Butler, of Massachusetts, was the candidate of the Greenback-Labor party, and John P. Saint John was the candidate of the Prohibition party.

President Cleveland proceeded to extend the civil-service reform to a vast number of offices, thus securing the antagonism of many of the political leaders in his own party. The death of Vice-President Hendricks made necessary the passage of a law governing the Presidential succession. During the same administration a new anti-polygamy law, the Interstate Commerce Act of 1887 and a law prohibiting Chinese immigration, were passed. The administration was characterized by an unprecedented use of the veto power, especially upon private pension bills. The campaign of 1888 turned upon the tariff,

EXPLORATIONS

1400 | 1500 | 1600 | 1700

INDIANS

Nations **Tribes**

Catawbas Uchees
Cherokees Natchez
Sioux
Huron-Iroquois — Hurons, Eries
Mobilians — Creeks, Seminoles, Choctaws, Chickasaws
Iroquois (Six Tribes) — Mohawks, Oneidas, Onandagas, Cayugas, Senecas, Tuscaroras
Algonquins — Chippewas, Menomenees, Miamis, Sacs, Foxes, Kickapoos, Abenaquis, Narragansetts, Pequods, Massachusetts, Mohegans, Delawares, Powhattans, Shawnees

SPANISH

92 Columbus discovers West Indies
98 Columbus discovers American Continent
99 Amerigo Vespucci visits America
12 Ponce De Leon visits Florida
13 Balboa reaches Pacific Coast
20 Cortez conquers Mexico
28 De Narvaez explores Florida
39 De Soto visits America
41 De Soto discovers Mississippi River
65 St. Augustine founded by Melendez

ENGLISH

97 John Cabot discovers Newfoundland
98 Sebastian Cabot explores American Coast
76 Frobisher visits Labrador
79 Drake explores Pacific Coast
83 Gilbert's voyage
84-87 Raleigh attempts to settle Roanoke Island
2 Gosnold's voyage
7 Settlement at Jamestown
20 Puritans settle at Plymouth
34 Maryland settled by Catholics

FRENCH

24 Verrazzani explores Atlantic Coast
34 Cartier explores St. Lawrence
42 Roberval visits Canada
64 Huguenots in Florida
98 La Roche in Nova Scotia
4 De Monts founds Port Royal
8 Champlain founds Quebec

DUTCH

9 Hudson explores Hudson R.
14 May and Block explorations
14 New Amsterdam founded

Contemporaneous History

15 John Huss burned
20 Field of the Cloth of Gold
21 Diet at Worms
29 Joan Arc raises siege of Orleans
30 Augsburg Confession
32 Battle of Lutzen
48 Treaty of Westphalia
55 War of the Roses
40 Order of Jesuits founded
66 London Fire
56 Turks defeated at Belgrade
54 Siberia discovered
71 Cossacks subdued
69 Ferdinand marries Isabella
87 Mary of Scots beheaded
Peace of Ryswick 97
80-84 Inquisition
88 Spanish Armada
Peace of Carlowitz 99
92 Ferdinand takes Granada

COLONIES

1600 — 1700 — 1775

VIRGINIA
7 Settlement at Jamestown
8 John Smith governor
19 Slavery introduced
19 Legislative Assembly
24 Overthrow of London Co.
29 Sir John Harvey
Gov. Berkeley 42
44 Indian Massacre 75 Bacon's Rebellion 93
51 Navigation Acts
77 Proprietary Government
Settlers - English Adventurers Motive - Wealth Livelihood - Agriculture
90 Sothel's Rebellion
11 Coree War
91 Union of Carolinas 29 Separation
- Agriculture and Political Strife Livelihood - Rice, Tar and Turpentine
15 Proprietary government
91 Royal Province
Livelihood - Agriculture and Manufacturing
William and Mary's College founded
32 Birth of Washington
Virginia Resolutions 65

MARYLAND
34 First settlement at St. Marys
49 Toleration Act
Settlers - Roman Catholics Motive - Religion

NORTH CAROLINA
53 First settlement from Virginia
63 Grant to Proprietors
Settlers - Refugees and Huguenots Motive

NEW JERSEY
23 Settled by Dutch
64 Elizabethtown settled 88 Charter annulled
65 Slavery introduced
2 Reunion of Jerseys
32 Ft. Nassau destroyed by Ind. 73 Division East and West Jersey
38 Separated from New York
Settlers - Dutch and Quakers Motive - Agriculture Livelihood - Agriculture

NEW YORK
9 Hudson sails up Hudson River
23 New Amsterdam settled
15 Trading post at Manhattan Is.
21 Dutch West India Co. formed
29 Patroon system organized
38 Delaware settled by Swedes
47 Peter Stuyvesant
64 English Conquest
73 Reconquered by Dutch
74 English Colony 97
Andros' Administration 75
89 King William's War
90 First Intercolonial Assembly
Settlers - Dutch Motive - Trade Livelihood - Furs
Capt. Kidd Piracy
44 Negro Plot
French and Indian War 54
First Colonial Congress 65

DELAWARE
82 Added to Pennsylvania
Settlers - Swedes and Quakers Motive - Agriculture Livelihood - Agriculture
3 Becomes separate colony
32 Gov. Crosby

CONNECTICUT
33 Hartford settled 62 New Charter Granted
Pequod War 36 43 New Haven Republic organized
89 Charter hidden
1 Yale College founded
Settlers - Puritans and Colonists Motive - Agriculture and Religion Livelihood - Agriculture and Manufacturing

RHODE ISLAND
36 Settled by Roger Williams
Newport founded 39 47 Code of laws enacted
87 Joined to New York
Settlers - Dissenters Motive - Religion Livelihood - Agriculture and Fishing

MASSACHUSETTS
20 Settlement at Plymouth
23 New Hampshire settled
30 Capital at Boston 47 Public Schools Est.
Harvard College founded 38
75 King Philip's War
Loses Charter 84 92 Witchcraft
39 First printing press at Cambridge
90 King William's War
90 First paper money
Settlers - Puritans Motive - Religion Livelihood - Farming and Fishing
2 Queen Anne's War
44 King George's War
Quebec captured 59
45 Capture of Louisburg
French and Indian War 54

NEW HAMPSHIRE
79 Separate Col. 98 Absorbed by Massachusetts
Settlers - Colonists from Massachusetts Motive - Trade Livelihood - Agriculture and Fishing

NEW HAMPSHIRE
41 Finally separated

SOUTH CAROLINA
70 Settled by English
71 Slavery Intro. 80 Charleston founded
Settlers - Refugees Motive- Agriculture and Religion
2 Expedition against St. Augustine
6 Spanish invasion
29 Royal Province
Livelihood- Cotton, Rice and Silk

PENNSYLVANIA
81 Settled 92
82 Ind. Treaty
Settlers - Quakers
18 Death of Penn
Penn dispossessed French and Indian War 54
1 Charter of Privileges Braddock's defeat 55
Motive - Religion Livelihood - Agriculture, Mining and Manufacturing

GEORGIA 53 Royal Province
33 Settled at Savannah
39 War with Spaniards
Settlers - Scotch and Poor Motive- Philanthropy Livelihood - Cotton

REVOLUTION

1775	1776	1777	1778	1779	1780	1781
Lexington and Concord April 19 Smith Parker Pitcairn	Dorchester Heights March 4 Washington	Princeton Jan. 3 Washington Mawhood	Naval Battle March 7 Randolph Yarmouth	Kettle Creek Feb. 14 Pickens Tories	Monk's Corner April 14 Huger Tarleton	Cowpens Jan. 17 Morgan Tarleton
Ticonderoga May 10 Allen Arnold	Sullivan's Island June 28 Clinton Moultrie Parker	Fort Schuyler Aug. 3 Herkimer St. Leger	Monmouth June 28 Washington Clinton	Vincennes Feb. 25 Clark Hamilton	Capture of Charleston May 12 Clinton Lincoln Cornwallis	Guilford Courthouse March 15 Greene Cornwallis
Crown Point May 12 Warner	Long Island August 27 Putnam Clinton	Bennington Aug. 16 Stark Baum Warner Breyman	Wyoming Massacre July 3 Indians Butler	Brier Creek March 3 Ashe Prevost	Waxhaw Creek May 29 Buford Tarleton	Hobkirk's Hill April 25 Greene Rawdon
Bunker Hill June 17 Prescott Howe	Harlem Plains Sept. 16 Knowlton Leitch Leslie	Brandywine Sept. 11 Washington Howe	Newport Aug. 29 Greene	Stony Point July 16 Wayne	Hanging Rock Aug. 6 American Sumter Loyalists	Fort Watson April 26 Marion Lee
Capture of Montreal Nov. 13 Montgomery Prescott	White Plains Oct. 28 Washington Howe	Bemis Heights Sept. 19 Gates Burgoyne	Light Horse captured Sept. 28 Baylor Grey	Elmira Aug. 29 Sullivan Indians	Camden Aug. 16 Gates Cornwallis	Jamestown Ford July 4 Wayne Cornwallis
Great Bridge Dec. 9 Dunmore	Fort Washington Nov. 16 Magaw Howe	Germantown Oct. 4 Washington Howe	Massacre Oct. 15 Pulaski's Infantry Ferguson	Paul Jones' Victory Sept. 23 Richard Serapis	Fishing Creek Aug. 18 Sumter Tarleton	Fort Griswold Sept. 6 Ledyard Arnold
Quebec Dec. 31 Arnold Montgomery	Trenton Dec. 26 Donop Washington Rall	Saratoga Oct. 7 Gates Burgoyne	Cherry Val. Massacre Nov. 10 Indians Butler	Savannah Oct. 9 Lincoln D'Estaing Prevost	King's Mountain Oct. 7 Campbell Ferguson	Eutaw Springs Sept. 8 Greene Stewart
		Fort Mercer Oct. 23 Greene Donop	Savannah Seized Dec. 29 Campbell		Blackstock Nov. 20 Sumter Tarleton	Siege of Yorktown Sept. 8 to Oct. 19 Washington Cornwallis
Troops Enlisted: 37,363	89,761	68,720	51,046	44,275	43,079	29,340
Miscellany: Washington Commander in Chief First Continental Currency	Evacuation of Boston Declaration of Independence	Congress adopts Flag Articles of Confederation	Alliance with France Charleston Burned	Depreciation of Federal Money	First Bank Chartered England Declares War with Holland	Federal Union Established Bank of North America Chartered

AMERICANS ▭ BRITISH ▭ INDECISIVE ▭

ADMINISTRATIONS

		1789	1797	1801	1809	1817
EXECUTIVE	President	WASHINGTON	ADAMS	JEFFERSON	MADISON	
	Leaders in Cabinet	Jefferson Hamilton	Pickering Wolcott	Madison Dearborn	Gallatin Dallas	
	Important Messages & Papers	Farewell Address		First Written Message		
JUDICIAL	Chief Justice	Jay	Ellsworth	Marshall		
	Decisions			Marbury and Madison		
LEGISLATIVE	Pres. of Senate	Adams	Jefferson	Burr Clinton	Clinton Gerry	
	Speaker of House	Muhlenberg Trumbull Dayton	Sedgwick	Macon Varnum	Clay Cheves	
	Number of Members	Senate 26 House 65	Senate 32 House 105	Senate 32 House 141	Senate 34 House 181	
	Leaders	Madison Gerry	Clay	J. Q. Adams	Calhoun Webster	
	Laws	Revenue Bill Naturalization Law	Alien and Sedition Acts	Embargo Act	Non Intercourse Act	
IMPORTANT EVENTS	Wars	Indian Whisky Rebellion	Quasi	Tripoli	Indian War of 1812	
	Inventions	Cotton Gin Nail Cutter	Locomotive Plow	Steamboat Blow Pipe Steam Dredge	Breech-loading Rifle Printing of Cotton Goods	
	Acquisition Territories			Louisiana		
	Foreign Relations	Treaty with England Treaty with Spain	Treaty with France		Treaty of Ghent	
	Slavery	Petition to Abolish sent to Congress		Slave Trade Abolished		
	Deaths	Allen Franklin Hancock Jones	Henry Washington	Hamilton Sam'l Adams Moultrie	Clinton Gerry	
	States Admitted	Vermont Kentucky Tennessee		Ohio	Louisiana Indiana	
	Miscellany	Census Capitol Moved		Lewis & Clark Expedition West Point Academy	Washington Burned	
	Foreign Events	French Revolution		Milan Decree	Revolution in Venezuela Mexican Uprising	

ADMINISTRATIONS

	1817	1825	1829	1837	1841	1845	1849
Pres.	MONROE	ADAMS	JACKSON	VAN BUREN	HARRISON TYLER	POLK	
Cabn't	Adams Calhoun	Clay Rush	Van Buren Livingston Berrien	Forsyth	Webster Calhoun	Buchanan	
Messages	Monroe Doctrine		Bank Message				
Chief Just.			Taney				
Decisions	Dartmouth College						
Pres. Senate	Tompkins	Calhoun	Calhoun Van Buren	Johnson		Dallas	
Speak. House	Clay Taylor Barbour	Taylor Stevenson Bell Polk		Hunter	White Jones	Davis Winthrop	
No. Mems	Senate 42 House 213	Senate 48 House 213	Senate 48 House 240	Senate 52 House 240	Senate 52 House 223	Senate 58 House 223	
Leaders	Clay Webster Jackson	Van Buren Buchanan	Webster Clay Hayne Benton	Wright Adams		Wilmot Corwin	
Laws	Tenure of Office Act		U. S. Bank Bill Vetoed Force Act	Sub-Treasury Bill	Annexation Bill	Wilmot Proviso	
Wars	Seminole		Black Hawk Seminole	Seminole	Dorr Rebellion	Mexican	
Inventions	Shoe Pegs Velocipede	Planing Mach. Passenger Train	Colt's Revolver Typewriter Chloroform used	Friction Match Elec. Telegraph	Telegraph Line Use of Ether	Sewing Machine Hoe Ptg. Press	
Acquisitions	Florida						
For'n Rel.	Treaty with Canada		Treaty with Brazil		Webster-Ashburton	Treaty of Hidalgo	
Slavery	Missouri Compromise	Slavery abolished in N. Y.	Anti-Slavery in New England	Anti-Slavery Party	Growth of Abolition	Wilmot Proviso	
Deaths	Decatur Boone Stark	Adams Jefferson	Jay Monroe Madison Marshall	Black Hawk	Channing Jackson	J. Q. Adams	
States Admit.	Mississippi Illinois Alabama Maine Missouri		Michigan Arkansas		Texas Florida	Iowa Wisconsin	
Miscellany	First Steam Voyage across the Atlantic	First Threshing Machine	Rise of American Literature	Indians removed to Indian Ter.	Postage Stamps	Discovery of Gold in Calif.	
For'n Events	Mexican Revolution		Independence of Mexico Independence of Texas	Canadian Reb. Victoria Crown.	Federal Union in C. A. Dissolved		

ADMINISTRATIONS

	1849	1853	1857	1861	1869	1877	1881	1885
Pres.	TAYLOR FILLMORE	PIERCE	BUCHANAN	LINCOLN JOHNSON	GRANT	HAYES	GARFIELD ARTHUR	
Cab't	Webster Meredith	Marcy Davis	Cass Dix	Seward McCulloch	Fish Sherman Brewster	Evarts Sherman	Blaine Lincoln	
Mes-sages			Revolutionary Message	Emancipation Proc. Amnesty				
Chief Just.				Chase	Waite			
Dec-isions								
Pres. Sen't'e			Breckenridge	Hamlin	Colfax Wilson	Wheeler		
Speak House	Cobb	Boyd Banks	Orr Pennington	Grow Colfax	Blaine Kerr Randall		Keifer Carlisle	
No. Mems	Senate 62 House 237	Senate 62 House 237	Senate 66 House 243	Senate 50 House 243	Senate 74 House 293	Senate 76 House 293	Senate 76 House 332	
Lead-ers	Douglas Davis	Cass Stephens	Seward Cameron	Stevens Morrell Sumner Crittenden	Morton Schurz Wilson Trumbull	Edmunds Bland	Pendleton Conklin	
Laws	Omnibus Bill	Kansas-Nebr. Bill		Income Tax Law Civil Rights Bill	Salary Act	Anti-Chinese Bill	Civil Service Chinese Bill	
Wars		Border Warfare	J. Brown's Raid Mormon Insur'n	Civil War	Modoc Sioux	Nez Perce	Apaches Captured	
Inven-tions		Type Setting Machine	Sleeping Car Atlantic Cable	Repeating Rifle Gatling Gun	Fire Extinguisher Telephone Crematory	Steam Heating Phonograph	Flying Machine	
Acqui-sitions		Gadsden		Alaska				
For'n Rel.	Clayton-Bulwer Treaty	Treaty with Japan	Treaty with China	Burlingame Treaty	Treaty of Washington	New Chinese Treaty	Treaty with China	
Slav-ery	Fugitive Slave Law	Underground Railway	Dred Scott Decision	Secession of States 13th Amendment	Ku Klux Klan Colored Senator	Negro Exodus		
Death	Calhoun Webster Clay		Irving Mann	Tyler Van Buren Jackson Buchanan	Greeley Pierce Prentice Farragut	Bryant Young	Garfield Emerson Longfellow	
States Admit.	California		Minnesota Kansas Oregon	West Virginia Nevada Nebraska	Colorado			
Misc'l any		Lopez Expedition	Secession	Atlantic Cable Laid	Pacific R. R. Chicago Fire Weather Bureau	Electric Light Life Sav. Station	Washington Monument	
For'n Events	Cuban Revolution	Ostend Manifesto	Three Year War in Mexico	Fenian Raid in Canada Wars in South America	Franco-German War	Famine in Brazil		

ADMINISTRATIONS

	1885	1889	1893	1897	1905	1909	1913	1921
Pres.	CLEVELAND	HARRISON	CLEVELAND	MCKINLEY	ROOSEVELT		TAFT	WILSON
Cab't	Bayard Fairchild	Blaine Elkins	Olney Carlisle	Root Day Wilson Hay	Taft Root		Knox MacVeagh	Bryan Lansing Lane McAdoo
Mes-sages			Venezuela	Panama Canal	Trusts		Trusts	Tariff and Currency Peace Treaty
Chief Just.	Fuller						White	
Decl-sions			Income Tax	Northern Securities			Standard Oil Tobacco	Prohibition Volstead Act
Pres. Sen'te	Hendricks	Morton	Stevenson	Hobart Roosevelt	Fairbanks		Sherman	Marshall
Speak. House	Carlisle	Reed Crisp	Reed	Henderson	Cannon		Clark	Clark Gillette
No. Mems	Senate 76 House 332	Senate 88 House 357	Senate 88 House 357	Senate 90 House 386	Senate 90 House 386		Senate 92 House 391	Senate 96 House 435
Lead-ers	Logan Gorman	McKinley Sherman	Wilson Hill	Dingley Williams Hanna Hoar	Lodge Tillman		LaFollette Underwood	Martin Lodge Mann Underwood
Laws	Interstate Com. Act Dawes' Bill	International Copyright Law	Sherman Law Wilson Bill	Chinese Exclusion Bill	Pure Food Law Meat Insp. Bill		Payne-Aldrich Tariff	Tariff Banking and Currency
Wars	Anarchist Riots	Sioux War	Coal Strikes Railroad Strikes	Spanish American Philippines	Springfield Riot			World War U. S. Entered 1917
Inven-tions		Natural Gas used	Niagara Falls Harnessed	Liquefied Air Wireless Telegraphy	Aeroplane			Wireless Telephone
Acqui-sitions				Hawaii Porto Rico Guam Philippines Samoa				
For'n Rel.	Extrad. Treaty C-Bayard Treaty	Samoan Treaty Recip. Treaty		Arbitration Treaty Hay-Pauncefote Treaty	Hay-Varilla Treaty			Freedom of the Sea Mexican troubles
Slav-ery								
Death	Sheridan Arthur Seymour Grant	Fremont		Jos. Jefferson McKinley Harrison	Harper Hoar Cleveland		Harlan Dolliver	J. P. Morgan Roosevelt
States Admit.	Wash. Mont. N. and S. Dakota	Idaho Wyoming	Utah		Oklahoma		Arizona New Mexico	
Misc. any	Earthquake in Charleston	Johnstown Flood	World's Fair at Chicago	Baltimore Fire Hague Peace Conference	Panama Canal		Postal Banks Parcel Post	16th, 17th, 18th, 19th Amendments
For'n Events	Chinese Exclusion Act	Brazil Republic Boxer Rebellion	Cuban Rev. Hawaiian Rev.	Cuba under protection of U.S Boer War	Russo-Japanese War		Turko-Italian War	Peace Treaty League of Nations

CIVIL WAR

1861	1862	1863	1864	1865
Fort Sumter Apr. 14 Anderson Beauregard	Mill Spring Jan. 19 Thomas Zollicoffer	Galveston Jan. 1 Renshaw Magruder	Olustee Feb. 20 Seymour Finnegan	Fort Fisher Jan.16 Porter Butler Whiting
Sewell's Point May 20 Ward Virginia Troops	Fort Donelson Feb. 16 Grant Buckner	Arkansas Post Jan. 11 Mc Clernand	Fort De Russy Mar. 14 Franklin Taylor	Old Town Creek Feb. 20 Cox
Fairfax Ct. Hse. June 1 Tompkins	Pea Ridge Mar. 7 Curtis Van Dorn	Bisland Apr. 12 Banks Taylor	Sabin Cross Rds. Apr. 8 Ransom	Fayetteville Mar. 8 Kilpatrick Hampton
Philippi June 3 Kelley Porterfield	Naval Battle Mar. 9 Monitor Merrimac	Port Gibson May 1 Mc Pherson	Wilderness May 5-6 Grant Lee	Averasboro Mar. 16 Sherman Hardee
Big Bethel June 10 Pierce Hill Magruder	Shiloh Apr. 6-7 Grant Johnston	Chancellorsville May 2 Hooker Lee	Spottsylvania May 10-12 Grant Lee	Bentonsville Mar. 19 Sherman Johnston
Romney Bridge June 11 Wallace Johnston	Williamsburg May 5 Mc Clellan Johnston	Suffolk May 3 Peck Longstreet	Resaca May 13 Sherman Johnston	Fort Steadman Mar. 25 Grant Lee
Carthage July 5 Sigel Jackson	Fair Oaks May 31 Mc Clellan Johnston	Champion Hills May 16 Grant Pemberton	Cold Harbor June 3 Grant Lee	Five Forks Apr. 1 Sheridan Lee
Rich Mountain July 11 Rosecrans Pegram	Cross Keys June 8 Fremont Ewell	Winchester June 15 Milroy Ewell	Petersburg June 18 Burnside Lee	Selma Apr. 2 Wilson Forrest
Carrick's Ford July 12 McClell'n Morris Garnett	Mechanicsville June 26 Mc Clellan Jackson Hill	Gettysburg July 1-3 Meade Lee	Atlanta Sept. 1 Sherman Hood	Petersburg Apr. 2 Grant Lee
Bull Run July 21 Mc Dowell Jackson	Gaines' Farm June 27 Porter Hill	Vicksburg July 4 Grant Pemt'n Johnston	Winchester Sept. 19 Sheridan Early	Richmond Apr. 3 Grant Davis
Wilson's Creek Aug. 10 Lyon Sigel McCulloch	Malvern Hills July 1 Porter Jackson	Port Hudson July 9 Banks Gardner	Fisher's Hill Sept. 22 Sheridan Early	Appomattox Apr. 9 Grant Lee
Carnifex Ferry Sept. 9 Rosecrans Floyd	Cedar Mountain Aug. 8 Banks Jackson	Chickamauga Sept. 19 Rosecrans Bragg	Cedar Creek Oct. 19 Sheridan Early	
Ball's Bluff Oct. 21 Baker	Antietam Sept. 17 Mc Clellan Lee	Bristow's Station Oct. 15 Meade Lee	Little Osage Rv. Oct. 25 Curtis Pleasanton Price	
Springfield Oct. 24 Fremont Thompson	Corinth Oct. 3 Rosecrans Van Dorn	Lookout Mt. Nov. 23 Hooker Bragg	Franklin Nov. 30 Schofield Hood	
Belmont Nov. 7 Grant Polk	Fredericksburg Dec. 13 Burnside Lee	Chattanooga Nov. 23 Grant Bragg	Nashville Dec. 16 Thomas Hood	
Dranesville Dec. 20 Mc Call Stuart	Murfreesboro Dec. 31 Rosecrans Bragg	Knoxville Dec. 4 Burnside Longstreet	Savannah Dec. 26 Sherman	
Miscellaneous Events: Davis President of Confederacy; England proclaimed neutrality	Iron Clad Oath Confiscation Proclamation Lee's Proclamation First issue of Greenbacks	Emancipation Proclamation Mexico made an Empire Gettysburg Speech	Grant made Lieut.-Gen'l Maximilian Emperor of Mexico Civil Wars in S. America	Thirteenth Amendment Freedman's Bureau Assassination of Lincoln Amnesty Proclamation

UNION CONFEDERATE INDECISIVE

OUTLINE HISTORY OF THE STATES

STATE	1789	1800	1810	1820	1830	1840	1850	1860	1870	1880	1890	1900	1910
Alabama Cotton State	1794 Yazoo land frauds		1813 Ft. Mims Massacre 1819 State	1826 Tuskaloosa capital	1832 First R. R. west of Alleghanies 1834 Coal discovered	1846 Montgomery capital	1851 "Southern Rights Convention"	1861 Montgomery Confed. capital	1874 End of carpet-bag rule	1881 Birmingham first coke furnace 1881 Tuskegee Institute	1897 Bir'gham steel mills 1901 Suffrage restricted	1910 Bailey peonage case 1911 Local option	
Arizona		1808 Mexican rebellion		1824 Mexican republic		1848 Part of U. S.	1851 Oatman Massacre 1854 Gadsen Purchase	1860 Provisional government 1863 Territory	1878 Transcontinental Ry.	1889 Phoenix capital	1893 First ostrich farm 1896 Last Apache uprising	1901 Arizona Rangers 1911 Roosevelt Dam	1912 State
Arkansas Bear State	1792 Beginnings of immigration	1803 Louisiana Purchase 1806 Dist. of Arkansas	1819 Territory; first newspaper	1821 Osage-Cherokee War 1821 Little Rock capital 1836 State		1840 Texas boundary 1849 "Marion County War"	1853 First railway	1861 Secession 1868 Readmitted	1874 Brooks-Baxter War	1884 State debt repudiated 1887 State Exposition	1897 Mississippi flood 1898 Ft. Smith tornado 1909 Compulsory Ed. law	1910 Initiative and Referendum	
California Golden State	1796 Visit of the "Otter"	1805 Russian traders	1812 Russian post, Bodega Bay	1821 Mexican Revolution 1826 First immigrant wagon	1839 Arrival of Capt. Sutter	1845-46 Bear Flag War 1848 Ceded to U. S.; gold	1850 State 1858 Fraser R. rush	1864 Yosemite Nat. Pk. 1868 State Univ. 1869 Union Pac. R. R.	1873 "No-fence" law 1877 Kearney's Workingman's Party	1885 Leland Stanford, Jr., Univ. 1887 Anti-Chinese Memorial 1892 Geary Act	1903 Pacific Cable 1906 S. Francisco earthquake	1911 Woman suffrage 1913 Jap. land bill	
Colorado Centennial State		1806 Pike's Peak discovered		1820 Long's expedition 1832-38 Ft. William and other posts		1842-44 Fremont's explorations	1858 Gold; Denver founded	1860 Territory of Jefferson 1861 Colorado Territory	1876 State 1877 Leadville discoveries	1881 Grand R. Valley opened 1890 Cripple Creek gold 1893 Woman suffrage	1901 Denver Juvenile Court 1909 Gunnison tunnel	1914 Coal miners strike	
Connecti't Nutmeg State	1794 Western Reserve sold	1804 First cotton mill	1814 Hartford Convention 1818 Present Constitution	1823 Trinity College founded	1837 Joint Stock Act	1846 Sewing machine invented	1855 Reform of election laws 1858-66 Buckingham, war governor		1873 Hartford sole capital	1881 New York boundary settled	1899 Compulsory primary education 1908 Hartford stone bridge	1912 Danbury Hatters' case	
Delaware Diamond State	1792 New state constitution			1829 Delaware & Chesapeake Canal	1831 Delaware College founded		1850 Democratic Party in control	1861 Refused to secede 1869 Delaware breakwater completed	1875 Public school system 1889 Addicks appears	1897 Senatorship contest; new constitution	1905 Pillory abolished	1911 "Powder trust" dissolved	
Florida Everglade State	1795 West Florida to France	1803 U. S. claims west of Perdido R.	1815 Jackson captured Pensacola 1819 Part of U. S.	1822 Territory	1832 Treaty of Payne's Landing 1838 Cherokees removed	1845 State	1855 Internal Improvement Fund	1861 Ordinance of Secession	1876 Election frauds	1888 Phosphate deposits discovered	1894 Great frost	1909 Hurricane at Key West 1912 Key West Railroad	
Georgia Empire State of South, or Cracker State	1793 "Chisholm vs. Georgia"	1801 First State Univ. in U. S. 1806 Longstreet's steamboat	1819 "Savannah" sailed for England	1827 Creeks removed	1841 Western & Atlantic Ry. begun		1850 "Georgia Platform"	1861 Secession	1870 School system	1881 Atlanta Cotton Exposition	1898 Cotton States Exposition 1908 Prohibition	1909 "Grandfather clause"	1912 Augusta car strike
Idaho Gem of the Mountains		1804 Lewis and Clark	1810 Fort Henry established		1834 Fort Hall	1842 Coeur d'Alene mission	1856-57 Indian outbreaks	1863 Territory	1877 Nez Perces revolt	1882 Gold at Coeur d'Alene	1890 State 1896 Woman suffrage	1905 Assassination of Gov. Steunenberg 1910 Forest fires	
Illinois Prairie State	1789 St. Clair and Knox counties 1795 Randolph county organized	1809 Territory	1812 Ft. Dearborn Massacre 1818 State	1823 Attempt to legalize slavery	1832 Black Hawk War	1840-46 Mormons, Nauvoo 1848 Ill. and Mich. Canal	1858 Lincoln-Douglas debates	1864 Camp Douglas Conspiracy 1867 State University	1871 Chicago Fire	1886 Haymarket Riot	1893 World's Fair, Chicago	1900 Chicago Drain. Canal 1901 Initiative and Referen. 1913 Partial woman suffrage	
Indiana Hoosier State	1794 Fort Wayne	1800 Territory, Vincennes capital	1811 Battle of Tippecanoe 1816 State	1825 Indianapolis capital	1830 Only three negro slaves left	1843 Lake Erie to Ohio River canal	1851 Present constitution	1863 Morgan's raid	1870 Terre Haute normal school	1888 Labor riots	1894 Railroad strike	1908 Gary built	1913 Trials of "Dynamiters"

Outlines planned by A. L. Roach

OUTLINE HISTORY OF THE STATES

STATE	1789	1800	1810	1820	1830	1840	1850	1860	1870	1880	1890	1900	1910
Iowa Hawkeye State		1808 Fort Madison	1810 Death of Julien Dubuque 1820 Keokuk founded by Dr. Muir		1830 First public school 1838 Territory	1846 State	1857 Spirit Lake Massacre	1868 Negroes enfranchised	1874 Grange Law 1882 Tornado		1894 Prohibition unconstitutional	1902 "Iowa idea"	Keokuk Dam
Kansas Sunflower State		1807 Zebulon Pike's explorations	1819 Dr. Say's expedition 1821 Kansas City founded		1830 Settlement of eastern Indians	1842 Fort Scott	1854-60 Struggle for Kansas	1861 State	1874 Patrons of Industry	1880 Prohibition	1892 Populist movement	1908 Direct primaries	1912 Woman suff. 1920 Labor Laws
Kentucky Blue Grass State	1792 State 1798 Kentucky Resolutions	1804-06 Burr conspiracy	1811 Mammoth Cave discovered	1820 Tennessee boundary fixed 1827 First coal mines	1835 First railroad	1845 "True American" established at Lexington	1852 Death of Henry Clay	1861 Saved to the Union	1874 Local option law 1878-79 Breathitt County feud	1888 Hatfield-McCoy feud	1891 Present constitution	1900 Assassination of Governor Goebel	1912 Compulsory education
Louisiana Magnolia State	1794 Mississippi the U. S. boundary	1803 Louisiana Purchase	1812 State	1825 Civil Code	1831 New Orleans capital (until 1849) 1835 First college	1845 Public school system	1852 Baton Rouge capital	1861 Secession	1874 "White League" riots	1884 Cotton Centennial exposition	1898 Lotteries forbid.; grandfather clause	1907 Atchafalaya Bay canal	1912 New Orleans commission govt.
Maine Pine Tree State	1783-98 Boundary disputes with Great Britain	1809 First cotton mill	1817 Boundary survey	1820 State	1838-39 Aroostook War	1846 First prohibition law	1855 Portland riots	1865 University of Maine	1879-80 Garcelon-Davis election disputes	1884 Prohib. amendment to const.	1891 Australian ballot	1900 Initiative and referendum	1910 Democratic governor
Maryland Old Line State	1790 Bank of Maryland	1804 Chesapeake & Delaware canal begun	1814 "Star Spangled Banner" 1828 B. & O. R. R.		1837 Governor elected by popular vote	1844 First telegraph line in U. S.	1850 Chesapeake & Ohio Canal	1861 Baltimore riots 1867 Johns Hopkins University	1877 Railroad strike	1880 Baltimore's sesquicentennial	1894 Coal miners' strike 1901 Ballot law		1912 Dem. Nat. Convention at Baltimore
Mass. Bay State	1794 First woolen factory in state	1807 Boston Athenaeum founded	1814 First power loom in America 1825 Bunker Hill Monument		1831 "The Liberator" established	1840 First steamship line to G. Brit. 1841-47 Brook Farm	1852 Death of Daniel Webster	1865 M. I. T. ("Tech") founded	1873 Hoosac Tunnel	1882 Longfellow's Death 1888 First Australian ballot law in U. S.	1891 Death of Lowell 1898 Electrocution	1909 New Boston charter	1912 Lawrence strike 1914 Cape Cod Canal open
Michigan Wolverine State	1796 Detroit in possession of U. S.	1805 Territory	1812 Surrender of Detroit	1825 Erie Canal opened 1837 State		1844-45 Iron and copper discovered	1855 Soo Canal	1864 Seizure of the "Philo Parsons"	1876 License	1884 Gogebic iron district opened	1899 Anti-trust law	1908 Great forest fires	1912 Presidential primary law, Detroit bribery cases
Minnesota Gopher State	1796 Possession by U.S.	1805-06 Pike's expedition	1819 Fort Snelling	1824 First flour mill	1832 Mississippi River's source discovered	1849 Territory	1858 State	1862 Sioux raids	1879 State law on savings banks	1884 Vermilion range opened	1892 Mesabi range opened 1894 Hinckley forest fires	1909 Death of John A. Johnson	1913 Railway rate decision
Mississippi Bayou State	1798 Territory	1809 Bank of Mississippi	1817 State	1822 Jackson capital	1830-32 Removal of Indians	1840 First railroad	1851 Secession movement	1861 Secession	1875 End of carpet-bag regime		1890 Present constitution	1909 Prohibition	1912 Machinists' strike
Missouri Bullion State	1797 Daniel Boone came	1803 Territory of Louisiana	1812 Territory of Missouri 1817 First steamboat at St. Louis 1821 State		1837 Platte Purchase 1838 "Mormon War"	1841 "Slicker War" 1849 Jackson Resolutions	1858 Death of Thomas H. Benton	1861 Saved to the Union	1874 Eads' Bridge finished		1899 Epileptic colony at Marshall	1901-05 St. Louis "boodlers" exposed 1904 Louisiana Purch. Expo.	1911 State capitol burned
Montana Treasure State		1804 Lewis and Clark				1840 Father de Smet's mission	1852 Gold discovered	1864 Territory	1876 Custer's Massacre 1889 State	1882 Anaconda mine	1891 Two legislatures	1906 Beet sugar refinery	1911 Pure-food laws

OUTLINE HISTORY OF THE STATES

STATE	1789	1800	1810	1820	1830	1840	1850	1860	1870	1880	1890	1900	1910
Nebraska Tree Planter State	1795 First trading post	1805 Bellevue founded	1819 Long's expedition	1825 Omaha founded	1834 Part of Arkansas, Missouri and Michigan	1849 First postoffice, Bellevue	1854 Kansas-Nebraska Act	1867 State	1872 Arbor Day	1887 Farmers' Alliance	1895 First irrigation law	1907 Primary election law	1911 Omaha commission govt. 1912 Initiative and referendum
Nevada Sage Brush State				1825 Peter Ogden's explorations	1833 Walker's expedition	1848 Part of U.S.	1859 Comstock lode	1861 Territory 1864 State	1879 Sutro Tunnel completed	1885 Nevada Silver Association		1900 Tonopah silver discoveries 1908 Truckee-Carson project	
N. Hamp. Granite State	1789 Original state	1805 Concord capital	1819 Dartmouth College case	1821 State "Literary Fund"	1835 First R. R. charter	1842 Boston & Maine R. R. opened	1855 "Know Nothing Party"	1868 Mt. Washington R. R.	1877 Biennial elections		1899 "Old Home Week"	1906 "Lincoln Republicans"	1912 Constitutional convention
N. Jersey Garden State	1789 Original state	1802 Removal of Indians	1817 Public school fund	1826 "Great Seal War"	1834 First R. R. (Camden & Amboy)	1844 Present constitution adopted		1865 John P. Stockton, senator	1871 Free public schools 1873-79 R. R. war	1884 Tax on R.R. franchises	1891-97 Anti-race track agitation 1891 Convict parole system	1904 "New Idea" 1909 Palisades Interstate Pk.	1911 Geran law 1912 Atlantic City corruption
New Mex.			1811 Beginning Mexican War of Independence	1821 Mexican province		1848 Ceded to U. S.	1850 Constitution adopted, but not admitted as state 1851 Territory 1853 Gadsden Purchase	1861 Texas Ran. Inv.	1879 Apache outbreak	1885-86 Apache outbreak under Geronimo	1896 "Enchanted Mesa" explored	1907 Anti-gambling law	1911 State
New York Empire State	1789 Original state	1804 Hamilton-Burr duel	1817 Slavery prohib. (in effect 1827) 1817 DeWitt Clinton, governor	1825 Erie Canal completed	1831 First R.R., Albany to Schenectady	1845 Anti-rent wars 1846 Feudal tenures abolished	1853 New York City Clearing House	1863 Draft riots 1869 Black Friday	1871 Canal frauds	1880 Metropolitan Museum opened 1883 Brooklyn Bridge	1897 Greater N. Y. 1899 Canal frauds	1905-06 Insurance investigations	1913 Impeachment of Gov. Sulzer
N.Carolina Old North State	1789 Original state 1791 Raleigh capital 1795 State University opens		1813 First cotton mill, Lincoln County	1823 Raleigh convention		1840 First R. R. and public school		1861 Secession 1862-65 Zeb. Vance, governor 1868 Ku Klux Klan	1870 Impeachment of Gov. Holden 1876 Present constitution	1883 State hospital at Morganton	1894 People's Party	1900 "Grandfather clause" 1909 Prohibition	1911 School for feeble-minded
N. Dakota Flickertail State	1793 First settlements	1803 Louisiana Purchase 1804 Lewis and Clark	1812 Pembina, Selkirk's settlement	1823 Long's explorations	1839 Fremont's explorations		1855 Warner's expedit.	1861 Terr. of Dak. 1863 Battle of White Stone Hills	1872 North. Pac. R. R.	1883 Univ. of N. D. 1889 State	1892-93 Mears' bank failures 1894 "Concentration movement"	1909 Liquor "ads" prohib.	1912 Initiative and referendum
Ohio Buckeye State	1794 Fallen Timbers Battle 1798 First terr. assembly	1803 State, Chillicothe capital 1806 Burr-Blennerhasset conspiracy	1813 Battle of Lake Erie 1816 Columbus capital	1828 Coal mining	1833 Oberlin College 1835-36 "Toledo War"	1841 Last of the Indians	1851 Constitution	1863 Morgan's raid 1861 Border governors' conference	1870 State University 1873 Public school law	1884 Discovery of Petroleum		1901-09 Johnson, mayor of Cleveland	1910-11 Adams Co. bribery cases 1912 Constitutional convention 1913 Dayton flood
Oklahoma Boomer State		1803 Louisiana Purchase			1834 "Indian Territory"	1842 Choctaw treaty	1851 Creek treaty		1872 First railroad 1879-80 "Boomers"	1889 First land open to settlement	1890 Okla. Territory 1892 University of Oklahoma 1898 Curtis Act	1903 Bartlesville petrol'm 1907 State 1909 Bank deposits guaranteed	1910 Okla. City, capital fields
Oregon Beaver State	1792 Discovery of the Columbia R.	1805-06 Lewis and Clark 1811 Astoria 1818 Joint occupation	1824 Russian claims surrendered 1824 McLoughlin, chief factor	1834 First missions	1843 "Great immigration" 1844 "Fifty-four forty" 1846 McLoughlin retired 1849 Terr.	1852 Gold discovered 1859 State		1864-73 1866 68	Modoc War Shoshone War 1876 Hayes-Tilden election dispute	1883 Record salmon catch	1891 Australian ballot	1903 Initiative and referen. 1906 Complete home rule for cities 1909 Klamath irrig. project	1912 Woman suff.
Pennsyl'a Keystone State	1790-1800 Philadelphia, national capital 1794 Whisky Insurrection 1799 Fries Rebellion		1812 Harrisburg capital	1825 Schuylkill Canal 1826 Internal improvement plan	1834 First R. R., free public schools 1838 "Buckshot War"	1845 Pig-iron made with bituminous coal	1859 Titusville petroleum field 1863 Battle of Gettysburg 1867 Bessemer steel		1873 Present constitution 1877 End of Molly Maguires	1880 Bryn Mawr founded 1889 Johnstown flood	1891 Carlisle Indian School 1892 Homestead strike	1901 Ripperbill 1902 Anthracite coal strike	1910 Pittsb. and State Cap'l graft 1911 Austin Dam

OUTLINE HISTORY OF THE STATES

STATE	1789	1800	1810	1820	1830	1840	1850	1860	1870	1880	1890	1900	1910
Rhode Isl'd Little Rhody	1790 State 1794 First calico printed in U. S.	1804 First woolen factory	1814 First power loom	1828 Public school system		1841 People's Constitution 1842 Dorr's Rebellion 1846 "Gold-filling" process discovered	1851 Dorr pardoned	1862 Massachusetts boundary fixed		1886-89 Prohibition 1888 Suffrage law	1893 Plurality elections 1900 Providence sole capital 1909 Veto power granted to governor		1911 Aldrich retired
S.Carolina Palmetto State	1789 Original state 1790 Columbia capital	1801 University of South Carolina 1808 Election reforms	1812 State Bank of South Carolina 1815 North Carolina boundary settled	1828 Calhoun's S. Carolina Expo. 1832 Nullification Ordinance		1845 Constitution	1850 Calhoun's death	1860 Secession 1861 Attack on Ft. Sumter 1868 Readmitted 1868 Free schools system	1870 State Bank liquidated 1878 Divorce prohibited	1886 Charleston earthquake	1893 Great storm; state dispensary 1895 New State constitution	1901 Charleston Exposition 1907 Disp'y system abolished	1911 Charleston Storm
S. Dakota Sunshine State		1804-06 Lewis and Clark 1805-1861 Part of territories of Louisiana, Missouri, Michigan, Wisconsin, etc.			1831 Steamboat "Yellowstone" 1838-39 Fremont's explorations	1843 Audubon's explorations	1856 Sioux Falls	1861 Terr. of Dakota	1872 First railroad 1874 Gold disc. Black Hills	1882 Univ. of South Dakota 1889 State	1890 Battle of Wounded Knee 1892 Natural gas, Pierre 1898 State dispensary	1900 License 1908 Stricter divorce law	1911 Jubilee celeb'n at Yankton 1912 Richards primary law
Tennessee Volunteer State	1796 State	1807 Nashville bank	1811 Tennessee program State Bank 1819 Memphis founded	1829 Internal improvements 1832 First state debt	1830 Public schools 1837 Boundaries determined 1843 Nashville capital	1847 Copper	1850 Nashville convention	1861 Secession 1865 Ku Klux Klan originated 1866 Readmitted to Union	1870 New constitution	1882 State debt compounded	1892 Phosph. discov. 1897 Tenn. Centen. Exposition	1900 Virginia boundary 1909 Prohib. govt. for 30 yrs.	1910 First Rep. 1914 Vanderbilt Univ. decision
Texas Lone Star State	1799-1801 Nolan's invasion		1810 Texas Republic provisional 1812-13 Magee's invasion 1819-21 Long's invasion	1821 Austin's colony 1826 Fredonian War	1836 Alamo; Republic of Texas	1845 Annexed to United States 1846-48 Mexican War	1850 Compromise of 1850	1861 Secession	1870 Readmitted 1874 End of reconstruction	1883 University of Texas 1887 Local Option	1896 Greer County case settled 1897 Production of petroleum	1900 Galveston flood	1911 Prohibition defeated 1912 Houston fire
Utah Salt Lake State				1824 Great Salt Lake discovered		1847 Mormons Coming 1848 Part of U. S. 1849 State of Deseret	1850 Territory of Utah 1853 Great Mormon Temple begun 1857 Mountain Meadows Massacre	1862 Beginning of mining industry 1869 Union Pacific Railroad completed	1877 Brigh. Young's Death	1882 Edmunds Bill 1889 First sugar refinery	1890 Public schools 1893 Mormon Temple completed 1896 State	1900 Initiative and referendum	1912 Carried by Taft
Vermont Green Mountain State	1791 State 1793 Constitution	1808 Montpelier capital	1812 Granite first quarried	1825 Beginning of emigration	1836 Unicameral legislature abolished 1849 Sullivan County Railway	1852 Prohibition		1864 Raid on St. Albans by Confederates 1866 Attempted Fenian invasion of Canada	1870 Council of censors abolished		1890 Australian ballot 1902 Prohibition abandoned; now license	1909 Corporation tax law	1912 Carried by Taft
Virginia Old Dominion	1798 Virginia resolutions 1799 Death of George Washington	1806 Trial of Aaron Burr	1811 Richmond Theater burned	1826 Death of Thomas Jefferson	1830 Constitution 1831 Nat Turner's Insurrection		1859 John Brown at Harper's Ferry	1861-65 Battleground	1870 Readmitted to the Union		1892 State debt refunded	1902 Suffrage limited by new constitution 1907 Jamestown Exposition	1911 State debt determined
Wash'gt'n Evergreen State		1804-06 Lewis and Clark 1818 Treaty of joint occupation	1824 End of Russian claims			1845 Provisional government 1846 Buchanan-Pakenham treaty 1848 Oregon Territory	1853 Washington Terr. 1859 Haro Archip'go dispute	1860 Salmon R. gold discoveries 1863 Present boundaries	1872 British Columbia boundary settled 1878 Constitution adopted		1883 Northern Pacific completed 1885-86 Anti-Chinese riots 1889 State	1909 Alaska-Yukon Exposition	1910 Woman suffrage
W.Virginia Panhandle State	1789-1860 See Virginia							1861 Wheeling conventions 1863 State	1872 Present const. 1875 Great R. R. strike	1885 Penna. boundary 1888 Hatfield McCoy feud	1897 Public executions abolished	1904 Tax Commission	1913 Miners' strk. 1914 Prohibition 1902 Monongahela R. imp.
Wisconsin Badger State	1794 Jay's treaty	1809 First sawmill	1816 U. S authority established	1822 Lead mining 1827 Winnebago upris'g	1832 Black Hawk War 1833 First newspaper 1836 Territory	1844 "Wisc'n phalanx" 1848 State; Germ. immig'n	1851 First railway; Portage Canal 1856 Bashford-Barstow contest	1862 Ryan address	1871 forest fires 1874 Potter law	1881 Green Bay Canal 1883 Racine tornado 1886 Milw'kee labor riots	1894 Northw. Forest fires	1901-06 LaFollette governor 1905 Physical valuation of R. R.	1910 Socialist Milw'kee mayor 1912 Woman suff. defeated
Wyoming Equality State		1803 Part of Louisiana Purchase 1807 John Colter	1811 Pacific Fur. Co.'s expedition	1824 Ashley's exploration	1832 Bonneville's trip over the Rockies 1834 Ft. Laramie	1842 Fremont's explorations; Ft. Bridger	1854 War with Sioux Indians	1867 Gold disc.; Cheyenne laid out 1869 Territory; woman suffrage	1872 Yellowstone National Park	1885 Anti-Chinese riots 1887 University of Wyoming	1890 State 1892 "Johnson County Raid"	1909 Commissioner of taxation	1912 Record year for crops

which President Cleveland had brought forward as an issue by a late message in December, 1887. Cleveland was nominated by the Democrats in that year, but was defeated by the Republican candidate, Benjamin Harrison, though Cleveland received a majority of the popular vote.

Harrison's administration was notable for the remarkable diplomacy of James G. Blaine, for the extension of the policy of reciprocity, for the passage of the McKinley Tariff Bill, the extension of the pension system by a dependent pension law, passed in 1890, by the repeal of the Bland-Allison law and the substitution of the Sherman Silver Purchase Act, requiring the Secretary of the Treasury to purchase 4,500,000 ounces of silver each month and to coin 2,000,000 ounces into dollars monthly. The monarchy in the Hawaiian Islands was overthrown, and a bill favoring annexation to the United States was passed by Congress. In 1892 the Democratic party returned to power, with Grover Cleveland and Adlai E. Stevenson as its candidates, the Republicans having nominated President Harrison and Whitelaw Reid. The People's party, or Populists, the successor of the Greenback-Labor party, nominated James B. Weaver of Iowa and received 22 electoral votes.

Financial Depression. The second administration of Cleveland opened with a terrible financial panic, with which most of the early important events of his term were connected, especially his efforts to repeal the Sherman law, his issuance of bonds to replenish the treasury gold reserve and the passage of the Wilson Tariff Law. The treaty of annexation of Hawaii was also withdrawn from the Senate, and the United States government made an effort to reëstablish the monarchy over the islands. Cleveland's term was also marked by the successful intervention of the United States in a boundary dispute between Venezuela and Great Britain; by a great world's fair at Chicago; by the settlement of the Bering Sea controversy over the seal fisheries; by the extension of the civil service reform and by a great strike of railroad employes, which necessitated the calling out of Federal troops. The Democratic party failed to support the President in his financial policy, and at its convention in 1896 it nominated William Jennings Bryan of Nebraska for President, upon a platform demanding the free and unlimited coinage of silver on the ratio of 16 ounces of silver to one ounce of gold. The Republicans nominated William McKinley of Ohio. A faction of the Democratic party formed a new organization, known as the National Democratic party, favoring the gold standard, and nominated John M. Palmer of Illinois. The Prohibitionist candidate was Joshua Levering; the Socialist Labor standard bearer was Charles H. Matchett. The Populist party endorsed Bryan and the Free Silver Prohibition party nominated Charles E. Bentley. McKinley was elected by a large electoral and popular majority.

Spanish-American War and its Effects. The most important episode of McKinley's term was the Spanish-American War (which see). It resulted in the abolition of Spanish rule in Cuba and the establishment of military government under the United States, which continued until 1902, when the Republic of Cuba was organized. The war also brought into the possession of the United States the Philippine Islands and Porto Rico. In 1898 Hawaii was annexed to the United States, and in 1900 it was made a territory.

A law establishing the gold dollar as the standard of currency was adopted in 1900, and bills reorganizing the army and abolishing the army canteen were passed in 1901. The United States participated in a joint international military expedition to China, to assist in the suppression of the Boxer rebellion, in 1900. The diplomatic events following this expedition emphasized the change in the position of the United States in international affairs, and showed its new rank as a world power.

The chief issues in the campaign of 1900 were imperialism, that is, the question of the retention of the Philippine Islands, and the trust problem. McKinley was again the Republican nominee, and Bryan was the Democratic candidate. McKinley was elected by an increased majority. Soon after his inauguration, President McKinley was assassinated, while attending the Pan-American Exposition at Buffalo, and he was succeeded by Theodore Roosevelt, who retained McKinley's Cabinet and furthered his policy.

Commercial and Economic Expansion. During Roosevelt's administration, the important events were the passage of the Chinese Exclusion Bill; a law providing for the irrigation of the arid lands of the West; the conclusion of a reciprocity treaty with

Cuba; the creation of a department of Commerce and Labor, which in 1913 was reorganized into the Department of Commerce and the Department of Labor, the passage of the bills for the reorganization of the militia, the increase of the navy and the creation of a general staff for the army; the passage of an anti-trust law in 1903; the ratification of a treaty between the United States and Great Britain, giving the United States the right to construct and maintain a canal across the Isthmus. In 1904 a treaty was concluded with the new Republic of Panama providing for the construction of the Panama Canal. Roosevelt's administration was also marked by the successful conclusion of a treaty fixing the boundary between Alaska and the Northwest Territories of the Dominion of Canada, the result being generally favorable to the United States. The campaign of 1904 turned on the personalities of the candidates and on the questions raised by the policy of the Roosevelt administrations. Roosevelt was elected by a large majority over Alton B. Parker, the Democratic candidate. The successful intervention of President Roosevelt to end the Russo-Japanese War, the prosecution of several large corporations for violation of the anti-trust law, the agitation for regulation of railroad rates, the rigid investigations of insurance corporations, and the movement for the conservation of natural resources are important in Roosevelt's second administration.

Republican Defeat. In the election of 1908, William Howard Taft, the Republican candidate, was successful over Bryan. In the spring of 1909 the President called Congress in special session to revise the tariff. But the new tariff was unpopular, and was one of the strongest factors in causing the election of a majority of Democrats to the House of Representatives in 1910. This Congress passed acts for the admission of Arizona and New Mexico as states, and considered a reciprocity treaty with Canada which was finally rejected by the Canadians.

The election of 1912 was marked by a split in the Republican party. The regular Republicans renominated Taft and Sherman, but the supporters of Roosevelt, charging that they had been defrauded of their rights in the convention, withdrew, held a convention of their own and formed the national Progressive party, which nominated Roosevelt for President and Hiram Johnson of California for Vice-President. The Democratic candidates, Woodrow Wilson and Thomas R. Marshall, were elected by a plurality of more than 2,000,000 votes.

Wilson's Administration. Immediately after his inauguration President Wilson called Congress in special session to revise the tariff; the Underwood-Simmons Tariff Act was the result. Other important legislation included the Federal Reserve Act of 1913, establishing the Federal Reserve Banks, the Clayton Anti-Trust Act; the Trade Commission Act, and the repeal of the clause exempting American ships from paying toll for passing through the Panama Canal, in 1914. The opening of the Panama Canal to commerce, the international expositions at San Francisco and San Diego, Calif., the Bryan arbitration treaties with most of the world's civilized nations, and the proclamation of the seventeenth amendment to the Constitution were other important events of Wilson's first term.

Foreign relations occupied the attention of the President and of Congress to an unusual extent. During Taft's administration a revolution occurred in Mexico. Madero, the President, was assassinated, and Huerta, who was considered responsible for Madero's death, had assumed the Presidency. Wilson refused to recognize Huerta, but maintained a strictly neutral policy towards Mexican affairs, notwithstanding many insults were offered to American citizens and the government of the United States.

Affairs came to a crisis in April 1914, when a number of marines from a United States warship stationed at Tampico were arrested by Huerta's soldiers, while they went ashore peaceably to purchase supplies. Rear-Admiral Mayo demanded the release of the men, an apology and a salute to the United States flag. Huerta refused to salute the flag, and the President applied to Congress for permission to employ the military and naval forces to enforce his demands. His request was granted, and United States forces occupied Vera Cruz. There was a strong demand for intervention, but the President continued his policy of "watchful waiting", in the belief that the forces under Carranza would soon overthrow Huerta, and this they finally accomplished.

After Carranza became President, Villa, his chief aid in the overthrow of Huerta, rebelled and gained control over a number

of the northern states of Mexico. In 1916 Villa's forces made a number of marauding raids into Texas, Arizona and New Mexico, and a punitive expedition under command of General Pershing, in conjunction with the forces of Carranza, attempted to capture Villa, but he escaped to the mountains, and in course of time the United States force was withdrawn.

The embargoes and blockades established by the belligerent nations in the World War complicated American relations with these nations, especially with Great Britain and Germany, because of the effect of these measures upon American commerce. The sinking of the *Lusitania*, May 7, 1915, by a German submarine, came near severing diplomatic relations between the United States and Germany, but the Imperial Government made promises that partially satisfied the President, and the breach was avoided. Germany's acts aroused intense feeling against the country in the United States, and many Americans expected and desired war.

In the campaign of 1916 the nominees of the Republican party for President and Vice-President were Charles Evans Hughes of New York and Charles W. Fairbanks of Indiana. President Wilson and Vice-President Marshall were the Democratic nominees. The Republicans attacked the President's foreign policies, such as his "watchful waiting" in regard to Mexico and his long drawn-out diplomatic contest with Germany, and they opposed the economic theories of the Democrats. The Democrats asked for an endorsement of Wilson's record for constructive statesmanship in domestic affairs and approval of his forbearance and patience in the handling of intricate international problems. One of the rallying cries of the Democrats was "Wilson kept us out of war." The election was very close, for the country was plainly confused as to the exact attitude of both parties toward Germany. Wilson and Marshall secured 276 electoral votes and Hughes and Fairbanks 255. The Republicans carried the East and several Middle West states; the Democrats carried most of the West, part of the Middle West, and the South solidly. In general, the President ran ahead of his party, but the Democratic majority in Congress was considerably reduced.

The Approach of War. In spite of his record as a peace President, Wilson was forced to lead the country into the World War early in his new administration. On January 31, 1917, the German government made known its decision to begin unrestricted submarine warfare. The President was informed that American ships of any kind whatsoever violating certain specified regulations would be sunk without warning. This decision was the culmination of a long series of insults on the part of Germany, including the indefensible activities of an unscrupulous and well-organized spy system.

With the approval of the majority of the people, the President on February 3 broke off diplomatic relations with Germany and handed Count Bernstorff, the German ambassador, his passports. After several weeks of uncertainty, during which German agressions continued unchecked, the President (April 2, 1917) appeared before a special session of the Sixty-fifth Congress, and in a speech of moving eloquence asked that body to declare that a state of war existed between the Imperial German government and the United States. The next day the Foreign Affairs Committees of both houses agreed upon a resolution formally declaring this fact. On April 4 the Senate passed the resolution by a vote of 86 to 6 and the House took similar action on April 6 by a vote of 373 to 50. On the afternoon of that day the resolution was signed by the President.

In the World War. Measures relating to the prosecution of the war were given immediate consideration. As emergencies arose, laws conferring extraordinary powers upon the President, providing for regulating the distribution of food and fuel, placing the operation of the railroads and finally of the telegraph and telephone lines under control of the government, were passed. Regardless of party, Congress and the nation supported the President in the prosecution of the war. Taxes were increased, and five government loans aggregating over $19,000,000,000 were authorized and oversubscribed. Never before had a nation accomplished a task of such magnitude within the allotted time as did the United States in prosecuting the war with Germany.

At the declaration of war America had an army of less than 200,000 men. The nation was insufficiently supplied with arms, munitions and other equipment for a large army, and was without sufficient ships for transporting men and supplies to Europe. Through the coöperation and help of its

Outline on the United States

I. Location and Extent
- (a) Latitude
- (b) Longitude
- (c) Boundaries
- (d) Area
- (e) Comparison with other countries

II. Surface and Drainage
- (a) Atlantic slope
- (b) Appalachian highlands
- (c) Great central plain
- (d) Rocky Mountain highlands
- (e) Pacific slope
- (f) River systems
- (g) Lakes

III. Climate
- (a) Conditions expected, due to latitude
- (b) Changes wrought by physical conditions
- (c) Average temperature in various sections
- (d) Average rainfall in various sections
- (e) Need for irrigation

IV. Industries
- (a) Mineral resources
  - (1) Where each is found
  - (2) Annual output and value
  - (3) States leading in production
- (b) Agricultural products
  - (1) Cereals
  - (2) Fruits
  - (3) Market gardening
  - (4) Live stock and dairy products
- (c) Manufactures
  - (1) Natural locations of districts
  - (2) Leading industries
    - (a) Iron and steel
    - (b) Textiles
    - (c) Boots and shoes
    - (d) Others of note
    - (e) Rank with other nations in production
- (d) Commerce
  - (1) Domestic commerce
    - (a) By rail
    - (b) By water
    - (c) Coasting trade
  - (2) Foreign commerce
    - (a) Leading countries included in
    - (b) Exports and imports
    - (c) Principal countries engaged in carrying trade

V. Population
- (a) Per cent of annual increase
- (b) Center and density of population
- (c) Comparative growth of cities and rural communities
- (d) Immigration

VI. Government
- (a) General character
- (b) Departments
  - (1) Executive
    - (a) President
    - (b) Vice-President
  - (2) Legislative
    - (a) Congress
      - (1) Senate
      - (2) House of Representatives
  - (3) Judicial
    - (a) Supreme Court
    - (b) Inferior courts
      - (1) Circuit courts
      - (2) District courts
      - (3) Courts of appeals
- (c) State governments
- (d) Government of dependencies
- (e) Territories

VII. Education in United States

VIII. Cities
- (a) List of twenty-five largest

IX. History
- (a) Periods
  - (1) Discovery and exploration
  - (2) Colonization
  - (3) Development of colonies
  - (4) War for independence
  - (5) Organization of republic
  - (6) National growth

(a) Development of resources
(b) Annexation of territory
(7) Mexican war
(8) Slavery issue
(9) Civil war
(10) Reconstruction
(11) Industrial progress
(12) Spanish-American war
(13) World War

Questions on the United States

How does the United States compare in area with the other great countries of the world?

How does it compare with them in population?

When it is 6 P. M. in Manilla, what time is it in New York?

What change does a ship have to make in its dates in going from San Francisco to the Philippine Islands?

What geographic conditions exert the greatest influence upon human development?

What effect does the geographic position of the United States have upon her industrial development?

How does this location affect her relations to other countries?

Why were the English colonies confined to a narrow strip of land along the Atlantic Coast?

What is the most remarkable feature of the boundary line between the United States and Canada?

Why is the Atlantic coast line so much longer than that on the Pacific?

Which coast has the larger number of good harbors? Why?

What is the Fall Line? Why is it so called?

What part of the United States is the greatest agricultural region in the world?

What conditions have made it so?

Account for the location and growth of the following cities: New York, Chicago, Galveston, Seattle.

How many railroads extend across the United States from the Mississippi River to the Pacific Coast?

What effect have these so-called transcontinental lines had upon the development of the country west of the Mississippi River?

How does the Constitution of the United States differ from the Articles of Confederation?

What political party supported the ratification of the Constitution? From what circumstance was this party named?

What American inventions have exerted the greatest influence upon the industries and commerce of the world?

What regions in the United States are widely known for their scenery?

What has the National government done to preserve these regions for the people?

What island possession of the United States is about two-thirds the area of Connecticut? How does it compare with Connecticut in population?

From what nations did the United States receive the largest number of immigrants in the years just preceding the World War?

What effect did the World War have upon immigration?

How do you account for the rapid growth of cities since 1890?

What effect did the entrance of the United States into the World War have upon the American merchant marine?

What precedents of long standing did President Wilson set aside?

Why does not the United States have a national system of education?

To what does the League of Nations bind the United States?

How many Americans were killed in the World War? How many died of disease? How many were wounded?

How important are the new oil fields in Texas?

What cities in the United States are almost directly north of the city of Panama, at the western terminus of the Panama Canal?

What is the status of woman suffrage in the United States?

What is the status of Porto Rico?

What is the "Galveston plan" in the government of cities?

allies, the unstinted devotion and loyalty of the American people and a speeding up of all war activities, the United States placed on the battlefields of France over 2,225,000 soldiers, trained and equipped, including needed men back of the lines. The American army played an important part in the operations of the summer of 1918, and contributed materially to bringing about an armistice on November 11, 1919. (For a full account of the nation's war activities, see the article WORLD WAR.)

The Way to Peace. During America's participation in the struggle President Wilson had issued a statement summarizing the objects for which America was fighting. These were grouped into fourteen paragraphs, the last of which called for a general association of the nations. This suggestion for a league of nations became the cornerstone of Wilson's peace policies. As spokesman on the moral issues of the war, the President became the outstanding figure in the diplomacy of the struggle, and it seemed fitting that he should head the American delegation to the peace conference, which met in Paris in January, 1919. His decision to cross the ocean and to remain away from his country a considerable length of time caused much discussion and some bitter criticism, as always happens when a precedent is broken. The President, however, felt that his personal attendance at the peace sessions was essential. The other American delegates were Secretary of State Lansing, General Tasker H. Bliss, Henry White, former minister to Germany, and Edward M. House, personal adviser of the President.

Wilson returned to America late in February to sign bills essential to carrying on the activities of the government, and after a week's stay returned to Paris, where he remained until the signing of the Treaty of Versailles, June 28. He reached home in July, and on the tenth of the month addressed a joint session of the Sixty-sixth Congress, which he had called by cable to meet in special session on May 19. The President gave a general summary of the results of the peace conference and voiced his conviction that a league of nations was vital to the future peace of the world. He then submitted the treaty to the Senate for ratification.

In the fall elections of 1918 the Democrats had lost heavily; the Republicans had a majority of two in the Senate and they controlled the House of Representatives. Considerable opposition to the proposed league had developed during the President's absence, and the President, sensing the need of solidifying sentiment for the covenant, began a speech-making tour in August in behalf of the treaty, but serious illness soon sent him home. For many months in the Senate the fate of the treaty was in doubt; the President was opposed to its alteration.

Recent National Issues. The great international questions that occupied the administration after 1914 somewhat overshadowed the events of domestic interest. By January, 1919, the XVIIIth Amendment to the Constitution, prohibiting the manufacture and sale of liquor, had been ratified by the requisite number of states, and a government proclamation set January 16, 1920, as the date for the amendment to go into effect. In November, 1918, however, President Wilson signed a food production bill making the United States prohibition territory after June 30, 1919. The "dry" interval was scheduled to last until the army was declared demobilized. Under this bill, on July 1, 1919, the entire country became a prohibition nation for the first time. The XIXth Amendment, extending suffrage rights to women throughout the country, was adopted by both houses of Congress in the spring of 1919, and was submitted to the state legislatures for ratification. Prominent measures before the Sixty-sixth Congress included a bill for the establishment of a new Department of Education. A movement was also under way for creating a budget system to regulate national finances.

Related Articles. At the end of each state article the reader will find listed the names of the cities, mountains, lakes and rivers of the region under discussion, as well as important historical events connected with the development of each state. There are other important lists following the articles on Agriculture, Education, and the different wars in which America has engaged, to all of which the reader is referred. Below are various other topics which will help one to secure detailed information on the subject.

PHYSICAL FEATURES

Alleghany Mountains
Appalachian Mountains
Canyon
Cascade Range
Coast Range
Colorado, Grand Canyon of the
Columbia River
Glacier National Park
Great Lakes
Mammoth Cave
Mississippi River
Missouri River
Natural Bridge
Niagara Falls and River
Ohio River
Palisades
Parks, National
Piedmont Region
Rocky Mountains
Royal Gorge
Saint Lawrence River
Sierra Nevada Mountains
Yellowstone National Park
Yosemite National Park

INDUSTRY AND PRODUCTS

Agriculture
Automobile
Barley
Bookbinding
Boots and Shoes
Brick and Bricklaying
Coal
Copper
Corn
Cotton
Cotton Gin
Dairying
Dry Farming
Fish and Fisheries
Forests and Forestry
Fur and Fur Trade
Gold
Horticulture
Iron
Irrigation
Lead
Leather
Lumber
Meat Packing
Natural Gas
Oats
Paper
Petroleum
Potatoes
Poultry
Printing
Seal
Silver
Steel
Textiles
Tobacco
Wheat
Zinc

TRANSPORTATION AND COMMUNICATION

Cable, Submarine
Canal (with list)
Railroad
Roads and Streets
Telephone
Telegraph

OUTLYING POSSESSIONS

Alaska
Guam
Hawaii
Philippine Islands
Porto Rico
Samoa
Virgin Islands of the United States

PRESIDENTS

See President of the United States

STATESMEN, MILITARY LEADERS, ETC.

See Biography

GOVERNMENT AND HISTORY

Alabama, The
Alien and Sedition Laws
Black Hawk
Boston Massacre
Boston Tea Party
Burr, Aaron
Chesapeake, The
Clayton-Bulwer Treaty
Confederation, Articles of
Congress
Constitution of the United States
Carpetbaggers
Courts
Declaration of Independence
Electoral College
Electoral Commission
Emancipation Proclamation
Embargo
Eric the Red
French and Indian Wars
Genet, Edmon
Hay-Pauncefote Treaty
Indians, American
Jay Treaty
Kentucky and Virginia Resolutions
Ku-Klux Klan
Lecompton Constitution
Louisiana Purchase
Mexican War
Missouri Compromise
Monroe Doctrine
Mound Builders
Nations, League of
Navigation Acts
Non-Intercourse Act
Northwest Territory
Nullification
Ordinance of 1787
Ostend Manifesto
Panama Canal
Political Parties in the United States
Prohibition
Puritans
Representatives, House of
Revolutionary War
Senate
Slavery
Spanish-American War
Squatter Sovereignty
Star Route
Supreme Court
Tariff
Versailles, Treaty of
War of 1812
Whisky Insurrection
Wilmot Proviso
Woman Suffrage
World War
X Y Z Correspondence

UNITED STATES STEEL CORPORATION, the largest business enterprise in the world, was organized in 1901, by the consolidation of a number of large corporations engaged in the manufacture of iron and steel. These included the Carnegie, the Federal Steel, the American Steel and Wire, the National Steel, the National Tube and the American Tin Plate companies. The United States Steel Corporation makes more steel than all of Great Britain or Germany, and one-fourth of the total amount made in all the countries of the world. Many of the employes have become stockholders, and the corporation has a commendable record in its dealings with its great army of workmen. In 1911 the United States government brought suit for the dissolution of the corporation on grounds of violating the Sherman Anti-Trust Law; in 1915 the courts sustained the corporation and an appeal was taken to the Supreme Court. There had been no decision on the appeal by September, 1919.

The capital of the corporation is over $1,000,000,000, and its gross earnings exceed a million dollars for every working day.

UNIVER'SALISTS, a religious body whose distinctive belief is that all men will ultimately be saved; in other words, that eternal progress is the lot of every created soul. This, they claim, is in harmony with the teachings of Jesus and early interpretations of the Bible, as well as with science and philosophy. As a faith universalism has a place in Christian thought far beyond the confines of the organized body, which was established late in the eighteenth century in Massachusetts by an English clergyman, John Murray. There are now about 55,000 Universalists in the United States and 2,000 in Canada.

UNIVERSAL LANGUAGE, a proposed medium of communication, for the use of all peoples of the earth which have commercial intercourse with each other. There have been two unsuccessful efforts in this direction within recent years, Esperanto and Volapuk (which see).

UNIVERSE, *u'ni vurs*, a term referring to all created things, embracing everything included in space, planets, suns, stars, considered as an orderly system. Man's idea of the universe has been an expanding one. At first he considered the earth the center about which sun, moon and stars revolved. Then he discovered that earth, asteroids and planets revolve about the sun and thought of our solar system as the universe. Now he knows that the system of which our earth is a part is but one among the millions whirling majestically in the immensity of space. The universe in its vastness is beyond the power of the mind to conceive.

Related Articles. Consult the following tites for additional information:

Astronomy
Earth
Moon
Nebular Hypothesis
Planet
Stars
Solar System
Sun

UNIVERSITY, an institution for advanced learning or for the examination of students who have completed specified courses in the higher branches. Universities are maintained in nearly all countries, and they confer degrees which receive universal recognition. A study of the organization of the universities of different countries shows that there are some variations in plan and spirit, but everywhere the term *university* implies a higher grade of institution than does *college* (which see).

In the United States. In the United States the term *university* has been used indiscriminately and is sometimes applied to degree-conferring institutions, regardless of their provision for graduate work. Moreover, many schools established in the newer states, either by private or denominational enterprises, have been styled universities when they are really colleges offering courses given in the undergraduate department of the true university.

A university maintains a college of liberal arts, and faculties of law, medicine, engineering, agriculture, journalism, etc. In the universities of highest standard students entering the professional departments are required to have two or more years of college work.

According to the plan upon which they have been established, American universities can be grouped into the following classes:

(1) Those which have developed from older colleges, such as Harvard, Yale, Pennsylvania and Princeton.

(2) Those that have been established by act of legislature and are known as state universities, such as the universities of Michigan, Minnesota, Wisconsin and Illinois.

(3) Those that have been established by benefactions, such as Johns Hopkins and Cornell.

(4) Those established under the auspices of some religious denomination, such as the Catholic University, at Washington; the University of Chicago, and Northwestern University, at Evanston and Chicago.

All of these institutions maintain undergraduate, or college, departments, and in some of the newer states the state university is under the necessity of maintaining a preparatory school.

German Universities. This class includes all universities where the German language is spoken, and in addition to those in Germany proper, it embraces the universities of Switzerland and Austria. In these universities the faculties of all departments are independent of one another; and the work of all is characterized by a scientific spirit which leads to the greatest freedom in original research. They derive their support from the government, but each is allowed the greatest liberty in the management of its own affairs and in the determination of its courses of study.

French Universities. The French universities are modeled after the University of Paris. A number of these were early organized; but during the French Revolution the universities, with all other educational institutions, were abolished. Upon the reorganization of affairs, Napoleon organized the University of France, which was at the head of the educational system. According to his plan, the university had charge of all higher education and was divided into fifteen faculties, located in as many educational districts, with the central authority at the University at Paris. This arrangement continued until 1896, when the districts were made independent, each being given control of its own affairs, under the direction of the minister of education.

English Universities. English universities are of two types, those founded during the Middle Ages, such as Oxford and Cambridge, which are unique among the universities of the world in their plan and organization, and those that have been founded since the eighteenth century, such as Durham University and the University of London, which is only a degree-conferring institution. Oxford and Cambridge are aggregations of separate colleges, each with its own faculty, rules of organization and traditions, but all subject to a central authority.

In Canada. Provincial and endowed universities and colleges are maintained in the Dominion in large numbers. The universities of British Columbia, Alberta, Saskatchewan and Manitoba correspond in a general way to the American state universities. In Ontario the University of Toronto is at the head of the school system. In Quebec the two leading universities, McGill

and Laval, are at the head of the Protestant and the Catholic schools, respectively.

(For more detailed information, consult the articles on the various institutions and provinces.)

Related Articles. The most important universities of the world are described in these volumes under their separate headings. They are listed at the end of the article Education. Each of the American state universities is given separate treatment in alphabetical order.

UNIVERSITY EXTEN'SION, a movement for extending the means of a higher education to persons of all classes, by a system of lectures and instruction, carried on by instructors of an established university. University extension originated with Cambridge University, England, in 1872, and it was taken up by the University of Oxford in 1885.

In the United States the movement was systematically started by Doctor Melville Dewey in 1888. At that time Doctor Dewey was chief librarian of Columbia University, and he laid before the regents of the University of the State of New York a plan for university extension, in connection with public libraries. Two years later a committee of the New York colleges and universities urged the regents to establish such a system of teaching under state supervision, and in 1821 a bill passed the legislature, appropriating $10,000 for the expenses of organizing the movement. Previous to this, some extension work had been done by the professors of Johns Hopkins University, who, however, conducted it as an individual enterprise, and in 1891 the University of Pennsylvania organized a corps of lecturers, who were to lecture on literature, history, sociology and science in the surrounding towns, wherever local organizations for the study of any of these subjects could be formed. From these beginnings the larger universities took up the work, and it gradually extended over the country. The most successful work has been done by the universities of Pennsylvania, Cornell, Harvard, Yale, Chicago and Wisconsin.

The plan includes (1) the arrangement of lecture study courses with syllabi, by the faculties of the university; (2) the organization of local centers, these centers to include people who are interested in pursuing some one of the lecture courses; they decide upon the subject to be studied and engage the lecturer, whose salary and traveling expenses are paid by the center; (3) the lecture, with studies conducted either before or after it, the lecturer carrying on a quiz, in which he gives opportunity for free discussion, asking and answering questions; (4) traveling libraries, which are sent to the different centers; (5) the preparation of papers by members of the center, these papers being read and graded by the lecturer; (6) the giving of credits by the university, for satisfactory completion of the work. These credits are of limited value to those who are seeking degrees. Agricultural colleges in some states have extension departments which render very practical assistance to the farmer and his family. The extension department of the University of Wisconsin is intended to cover practically all lines of industry in the state. See CHAUTAUQUA INSTITUTION.

UNTER DEN LINDEN, *un'ter dayn lin' den,* the finest and most famous avenue of Berlin, a mile in length and 196 feet in width, extending from the Brandenburg Gate to the monument of Frederick the Great and the Platz-am-Opernhaus. It is bordered by rows of beautiful linden and chestnut trees and flanked by many attractive shops. See BERLIN.

U'PAS, a tree belonging to the same family as the mulberry and breadfruit, common in the forests of Java and the Philippine Islands. The exaggerated stories formerly current concerning the deadly exhalations of this plant are now believed to have their origin in the presence of volcanic gases in the Javanese valleys. The sap, however, is poisonous and forms the principal element in a mixture used by the natives for tipping their arrowheads. The fiber of the bark is made into a kind of cloth.

U'RAL MOUNTAINS, a low mountain range in Russia extending southward from the Arctic Ocean, approximately along the 60th meridian of east longitude, and forming a portion of the boundary between Europe and Asia. The highest elevations are in the northern and southern sections and exceed 5,000 feet. The central section is low, and through a pass in this part of the range the Trans-Siberian Railway reaches Siberia. The lower slopes are covered with forests of evergreens, birch and beech. The Central Urals are rich in minerals, which include gold, silver, copper, iron, lead, zinc and platinum. There are also large deposits of coal.

URAL RIVER, a river of Russia, rising on the eastern slope of the Ural Mountains and flowing southward a distance of 1,400 miles into the Caspian Sea. Its chief tributaries are the Kizil and the Sak-Mara from the west, and the Sunduk, the Or and the Ilek from the east. Rainfall in the Ural basin is slight, and the river is shallow and unnavigable, except during the period of high water.

URA'NIA, in Greek mythology, the muse of astronomy, usually represented as holding in her left hand a celestial globe and in her right a staff or compass.

URA'NIUM, a rare, silvery-white metallic element, found chiefly as an oxide in pitchblende. It is the source of uranium yellow, used for painting on glass and porcelain, and in making the fluorescent yellow uranium glass. With its compounds, uranium is radioactive, undergoing slow disintegration with the formation of a new element, known as uranium X. See RADIOACTIVITY.

U'RANUS, the seventh planet from the sun, discovered by Sir William Herschel in 1781 and first called *Georgium Sidus*, in honor of George III, and afterwards *Herschel*, in honor of the discoverer. Both these names falling into disuse, the name *Uranus*, suggested by Bode, was adopted. Its mean distance from the sun is more than 1,750,000,000 miles. The length of its year is equal to about eighty-four of our years; the length of its day is thought to be about ten hours. Its mean diameter is estimated at about 33,000 miles. Its volume is about seventy-four times that of the earth, but its mean density is so much less that the mass of Uranus is only about twelve and one-half times as great as that of the earth.

Uranus has four satellites, which differ from those of all but one of the other planets, in that their orbits are nearly perpendicular to that of the planet, while the satellites of the other planets revolve in nearly the same plane as the planet to which they belong. Through the telescope, Uranus is merely a pale, greenish disk, with no certain markings; but the spectroscope seems to indicate that it differs materially from the other planets in composition. To the naked eye it appears like a star of the sixth magnitude. See PLANET.

URANUS, in Greek mythology, the husband of Gaea, the earth, and father of her children, the Titans and Cyclops. Uranus hated his children and confined them in Tartarus, but on the instigation of Gaea, Saturn, the youngest of the Titans, overthrew and dethroned him. From the part of his blood which fell upon the earth sprang Gigantes, father of the giants, and from the part which fell into the sea sprang the goddess Aphrodite.

UR'BAN, the name of eight Roman Popes, three of whom made notable contribution to history.

Urban I, SAINT, was bishop of Rome from 222 to 230. He was a strong pontiff, setting himself firmly against the schismatic movement of Hippolytus, which he kept in check.

Urban II was Pope from 1088 to 1099. He successfully prosecuted the struggle of the Papacy against Henry IV, and in 1094 he excommunicated Philip I of France for his matrimonial infidelity. In 1095 he presided at the famous Council of Clermont, which gave the impulse to the Crusades. He died before the success of the First Crusade, which he had organized.

Urban VIII, Pope from 1624 to 1644, supported Richelieu's policy against Austria and Spain. He was the founder of the College of the Propaganda and was a patron of Galileo.

URBAN'A, ILL., the county seat of Champaign County, 128 miles nearly south of Chicago, on the Wabash, the Cleveland, Cincinnati, Chicago & Saint Louis railroads. It is near Champaign, and the state university is situated between the two cities (see ILLINOIS, UNIVERSITY OF). The surrounding region is agricultural and contains valuable deposits of fire clay. The city has railroad shops, brick works, a lawnmower and iron novelty factories. Some of the prominent structures are the courthouse, the municipal building, the Masonic Temple, a Y. M. C. A. building, Thornburn High School, the Champaign County Teachers' and Pupils' Library and the Illinois State Laboratory and Natural History Library. Urbana was settled in 1824 and was chartered as a city in 1860. Population, 1910, 8,245; in 1917, 10,146 (Federal estimate).

URINE, *u'rin*, the fluid waste separated from the blood by the kidneys. It carries out of the system many of the wornout tissues, especially the nitrogenous waste. Its composition varies in different animals. Human urine, of a healthy individual, is a clear, amber-colored fluid, slightly acid, and it weighs one and fifteen-thousandths to one and twenty-five thousandths times as much as water. The average quantity discharged in

twenty-four hours is about two and a half pints, but the amount varies greatly, being diminished during excessive perspiration, thirst and fever, and being increased by cold, by drinking large quantities of water, by exercise, by certain foods, as salt or sugar, and by certain drugs. The principal solid and the most important ingredient found in urine is urea, the amount of which varies, being greater when animal food is used freely than when the diet is vegetable. The condition of the urine is an index to the state of health, and physicians often analyze it as a part of their diagnosis. The presence of albumin indicates Bright's disease, and the presence of sugar indicates diabetes.

URSA MAJOR and **URSA MINOR** (greater bear and lesser bear), two constellations of the northern hemisphere always visible and wheeling about the Polar Star, which at present is that star in the extremity of the little bear's tail. In the larger constellation are seven bright stars which outline the Great Dipper.

UR'SO, CAMILLA (1842–1902), a famous violinist, born in Nantes, France, who came to America at the age of ten. She appeared in concert with immense success, becoming the most noted female violinist in the world.

URSULA, SAINT, a legendary saint and martyr in the Roman Catholic Church, whose story has been given various forms. She is supposed to have suffered death about the year 237. By repute the daughter of a British king, she was desired by the son of another king for his wife; if his suit were denied, her father's lands would be devastated. Ursula had vowed to remain a virgin, so she succeeded in securing a three-years' delay before deciding. During this time she was to visit holy places, and she chose 11,000 virgins to accompany her. When Cologne was reached in a voyage down the Rhine the Huns murdered all of them; a church was later built over their remains.

URSULINES, *ur'su linz,* or **NUNS OF SAINT URSULA**, a sisterhood founded by Saint Angela Merici, at Brescia, Italy, in 1537, especially for the education of girls. They had many houses in France during the seventeenth century. The Canadian Ursulines date from 1639; the Irish, from 1771. There are now four houses in Ireland, four in England and twenty-four in the United States, with thousands of pupils. The whole number is 300 convents and 7,000 nuns.

Theater in Montevideo

URUGUAY, *u'roo gwa,* or *oo'roo gwi,* officially THE EASTERN REPUBLIC OF URUGUAY, is the smallest republic of South America. It is separated from Argentina on the west of the Uruguay River, and is bounded on the northeast and east by Brazil; the great estuary of the Rio de La Plata washes its southern shore. The country is nearly triangular in outline; its greatest length and breadth, 350 miles, are about equal; its area is 72,153 square miles, making it about one-half the size of Montana, or equal to the combined areas of North Dakota and Delaware.

The People. The population is about equally divided between the white and colored peoples, the latter including Paraguay Indians, or *Guarani,* and mixed breeds. Spaniards and Italians constitute the great majority of the whites, though the Germans and French are numerous. The speech, manners and customs are Spanish. The color line is drawn in the names of the political parties which are designated as *Blancos* and *Colorados* (whites and colored), but in political practice these names have lost much of their former significance. The chief cities are Montevideo (which see), the capital, with a population of 378,466 in 1916; Paysandu, on the Uruguay River; Mercedes, San José, Agosto and Maldonado.

The Roman Catholic Church has by far the largest number of adherents, and until 1916 it was the state Church. In that year the state Church was abolished, and all religious denominations were placed on an equal footing before the government.

Surface and Drainage. In the north and west there are ranges of low mountains, or hills, which attain an altitude of about 2,000 feet, and along the Uruguay River are tablelands, somewhat higher than those in Argentina; but the southeastern part of the country is low and marshy, and the interior is composed of rolling plains. The chief rivers are the Uruguay, which forms the western boundary, and its largest tributary, the Negro, which flows across the country in a southwesterly direction, dividing it into

two nearly equal parts. Lake Merim, situated on the northeastern border, is partly in Uruguay and partly in Brazil. The plains in the interior and the hills in the north and northwest are covered with dense forests, and the southeastern portion of the country is overgrown with grass.

Resources and Industries. The chief minerals are iron, zinc, lead, antimony, sulphur and coal, and some gold has been found. There are also quarries of marble and other building stone, but the mineral resources of the country have not been extensively exploited. The rich soil and salubrious climate, accompanied by an abundance of moisture, make the country favorable for agriculture, yet only small areas are under tillage. The chief crops are wheat, corn, barley, millet, oats, rye and flaxseed. Stockraising is the most important industry of the country, and large numbers of horses, mules, cattle and sheep are reared.

In 1917 there were over 8,000,000 cattle and 26,384,000 sheep. Wool is the chief export.

Transportation and Trade. Many of the rivers are navigable, and are used for inland transportation. There are over 1,600 miles of railway connecting the chief centers of trade within the country with those of Argentina, besides 170 miles of tramways. In proportion to its size, Uruguay has more miles of good roads than most other South American countries. All the important towns have telegraph and telephone service.

The imports consist of foodstuffs, cotton and woolen goods, clothing, machinery and other manufactured products. The exports include meats, hides, tallow, cattle, wool and a few other agricultural products.

Education. The University of Uruguay, at Montevideo, is the leading educational institution. It has departments of law, medicine, mathematics, agriculture, commerce, social service and veterinary science. There are also a preparatory school and other institutions for secondary education and normal schools for both sexes. Its library and museum are of considerable value. The public schools are poor. There is a compulsory education law, but it is not enforced, and the proportion of illiteracy is very large.

Government and History. Uruguay has a republican form of government, at the head of which is a President. This official was originally elected by the national legislative body, consisting of a Senate and a Chamber of Deputies. In 1919 a new constitution went into effect, providing for the popular election of the President and the Council of Administration of nine members, which appoints the following members of the President's Cabinet: the Ministers of Industries and Labor, Public Instruction, Finance and Public Works. The President appoints the Ministers of Foreign Affairs, Interior, Army and Marine. The Council prepares the budget, collects the taxes, may initiate new laws, arranges loans and provides for the increase or reduction of the national currency.

Uruguay was a source of dispute between Spain and Portugal in early times, but finally became a Spanish possession, forming a part of the vice-royalty of Buenos Aires. Later Brazil attempted to enforce the Portuguese claim, and for a short time occupied the country, but in 1828 Uruguay became independent. In October, 1917, the country severed diplomatic relations with Germany.

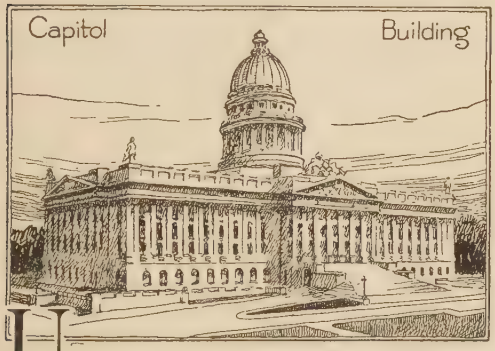
Uruguay River, a river of South America, which rises in the southeastern part of Brazil, flows westward, then southward, and enters the estuary of the Rio de la Plata. It forms a part of the boundary between Brazil and Argentina and the entire boundary between Argentina and Uruguay. Its length is about 950 miles, and in the lower part of its course it is from six to nine miles wide. It is navigable for large vessels as far as Paysandu, about 150 miles, and for smaller vessels for 300 miles farther.

USURY, *u' zhu ry,* originally, money paid for the use of money, or interest; according to present usage, interest in excess of the legal rate. In most states a maximum rate of interest is fixed by law, and penalties of greater or less severity, imposed for charging a higher rate. The table below gives the legal rate of interest in each of the states, and also the rate permitted if both parties agree. See INTEREST.

STATES	Legal Rate Per Cent	Contract Rate Per Cent	STATES	Legal Rate Per Cent	Contract Rate Per Cent
Alabama ...	8	8	Florida	8	10
Alaska	8	12	Georgia	7	8
Arizona	6	10	Idaho	7	12
Arkansas ..	6	10	Illinois	5	7
California ..	7	*	Indiana	6	8
Colorado ...	8		Iowa	6	8
Connecticut	6	6	Kansas	6	10
Delaware ..	6	6	Kentucky ..	6	6
D. of Col. ..	6	10	Louisiana ..	5	8

STATES	Legal Rate Per Cent	Contract Rate Per Cent	STATES	Legal Rate Per Cent	Contract Rate Per Cent
Maine	6	*	Ohio	6	8
Maryland ..	6	6	Oklahoma ..	6	10
Mass.	6	*	Oregon	6	10
Michigan ..	5	7	Penn.	6	6
Minnesota .	6	10	R. Island ..	6	*
Mississippi .	6	10	S. Carolina .	7	8
Missouri ...	6	8	S. Dakota ..	7	12
Montana ...	8	*	Tennessee .	6	6
Nebraska ..	7	10	Texas	6	10
Nevada	7	*	Utah	8	12
New Hamp.	6	6	Vermont ...	6	6
New Jersey	6	6	Virginia ...	6	6
New Mexico	6	12	Wash.	6	12
New York ..	6	6	W. Virginia	6	6
N. Carolina	6	6	Wisconsin .	6	10
N. Dakota .	7	12	Wyoming ..	8	12

*Any rate on which both parties may agree.



UTAH, one of the Rocky Mountain states, originally settled by the Mormons. They called the territory which they had organized *Deseret,* a name meaning *industry* as used in the Book of Mormon. Congress, however, refused to permit the use of this name, and the territory was organized under the present name, which is the designation of the Ute, or Utah, a tribe of Indians, and means *highlanders.* Because of the presence within its borders of the extensive salt lake so widely known, Utah is popularly, though not officially, called the *Salt Lake State.*

Location and Area. The state is bounded on the north by Idaho and Wyoming, on the east by Colorado and Wyoming, on the south by Arizona and on the west by Nevada. It has straight bounding lines on all sides, and is regularly oblong in shape, except in the northeastern corner, where the southwestern corner of Wyoming cuts off several square miles.

Having an area of 84,990 square miles, the state is the tenth in the Union in size; it is only 308 square miles larger than Minnesota, and is almost exactly twice as large as the state of Virginia.

People and Cities. Utah had a population of 373,351 in 1910, when it ranked forty-first in the Union in number of inhabitants. The average density per square mile was 4.5; only six other states are less densely settled. On July 1, 1918, according to Federal estimates, the population was 453,648. A little less than eighteen per cent of the whole population is foreign born, the principal nationalities being English, Danish, Swedish, Greek, German, Italian, Scotch and Norwegian. There are about 1,800 Indians on reservations, and about 1,200 negroes.

About three-fourths of the inhabitants are adherents of the Church of Latter Day Saints (Mormon). Roman Catholics, Methodists, Presbyterians and various other sects are found in small numbers.

About fifty per cent of the inhabitants live in municipalities having 2,500 population or more. The largest cities are Salt Lake City, the capital (121,623, Federal estimate for 1917), Ogden and Provo City.

Surface and Drainage. The surface is greatly diversified, containing high mountains, broad, arid valleys and desert plateaus. Near the middle of the northern boundary, the Wasatch Mountains enter the state and extend southward along the middle line, finally degenerating into plateaus. This is the principal mountain range of the state, and its position marks the highest land, from which, as a watershed, the streams flow eastward and westward, the former to the Colorado, the latter to sink in the Great Basin. Eastward from the Wasatch, along the northern boundary of Utah, stretches a broad, massive range, known as the Uintah.

Great Salt Lake, with its extraordinary percentage of saline matter in solution, is but the remnant of a vast body of fresh water, which once covered Western Utah. The principal stream of Eastern Utah is the Colorado. This is formed by the junction of Green River, which rises in the Wind River Mountains of Wyoming and the Grand, whose sources are in the snow fields on Long's Peak, in Colorado. The Green and the Colorado receive numerous branches from the Uintah and Wasatch ranges, among them the Uintah, the Price, the Fremont, the San Rafael and the Virgin. The scenery is varied, including fertile valleys, snow-capped mountains, the Great American Desert (an area as

large as Connecticut), deep canyons, dashing Cascades and the greatest natural bridges in the world, including the Nonnezoshi Bridge, noted for its great height, and the Rainbow Bridge, named from its beautiful arch.

Climate. The mean annual temperature ranges from 48°, in the north, to 51°, in the south. The mean temperature at Frisco is 51°. The average rainfall is 16 inches. If the snow chances to fall early in the winter, it becomes compact, and the melting is retarded. A fall of snow late in the season lies loosely on the mountain sides, and the water reaches the valleys before the crops are ready to receive its full benefit.

Mineral Resources. Next to agriculture, mining is the chief industry of Utah. Silver is found in nearly all the mountains, and in 1917 Utah led the states in the production of this metal. The gold product is about $3,650,000. Utah ranks third in the production of copper and fourth in lead. Other important metals are iron and zinc. There are extensive coal fields in Emery, Carbon and Summit counties, the largest sulphur deposits in the world are in Millard and Washington counties, and a superior quality of onyx is found on the west shore of Utah Lake. Salt is mined in Juab County and is obtained from Great Salt Lake. Other mineral products are asphalt, building stone, mica, graphite and gypsum. The state also has a natural gas area.

Agriculture. The agricultural districts of the state are chiefly in the valleys immediately west of the Wasatch Mountains, in the Great Basin. Elsewhere, except in a few favored spots, the altitude or the insufficient water supply east of the Wasatch range, prevents successful farming. This vast area is used for grazing, and large herds of sheep and cattle are raised. Many sheep are exported, and the annual production of wool exceeds 15,000,000 pounds.

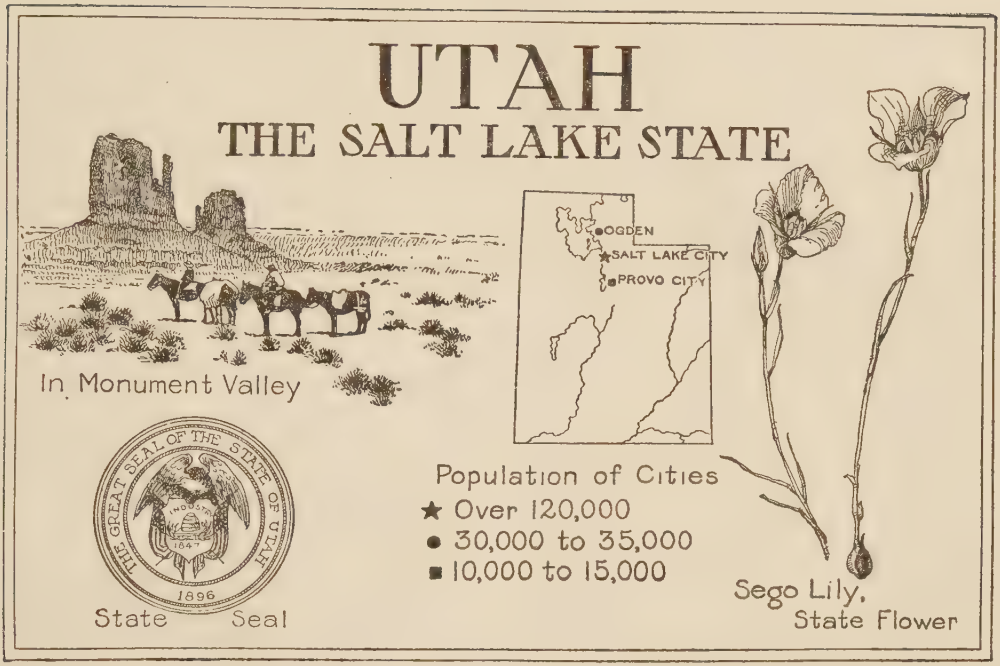
Irrigation in the Great Basin of Utah was the first important enterprise of the kind by Anglo-Saxons in the arid west. In 1847, the Mormon pioneers turned the waters of City Creek upon the parched soil of Salt Lake Valley, and now, out of 1,250,000 acres of improved land, over 1,000,000 acres are irrigated. The wheat, oats, barley, hay and rye are of superior quality, and the yield is large. In most localities the heights are too cool for successful corn-growing. Potatoes, beets and other vegetables are profitably raised. Utah is the fourth state in the production of sugar beets. Fruits are abundant. Among these are apples, peaches, plums, apricots, cherries and grapes; and in the south, oranges, lemons and figs are grown.

Manufactures. The leading manufacturing industry is the smelting and refining of copper and lead ores. Other industries, in the order of their importance, are the manufacture of beet sugar, flour and grist milling, construction and repair of railroad cars and locomotives, the manufacture of butter and cheese, the canning of fruits and vegetables, the manufacture of boots and shoes and of salt. The drying of fruits is an important industry.

Transportation. The state has railway communication with all the great cities, east and west. The principal roads are the Union Pacific, the Southern Pacific, the Denver & Rio Grande, the San Pedro, Los Angeles & Salt Lake and the Western Pacific. Short lines connect the mining towns with the principal cities. In all, the state has about 2,350 miles of railway lines. Utah has a considerable local commerce. The state exports, however, a large proportion of the products of the mines and ranges.

Government. The legislature consists of a senate and a house of representatives. The number of senators can never exceed thirty and the number of representatives cannot exceed three times, or fall below twice, the number of senators. Both senators and representatives are apportioned by districts, one-half of the senators being elected every two years, for a term of four years, and the representatives being elected for two years. The executive department consists of the governor, secretary of state, auditor, treasurer, attorney-general and superintendent of public instruction, elected for four years. The state courts comprise a supreme court, consisting of three judges, elected for six years, and such inferior courts as may be established by law. The judges of the district courts are elected for four years. The state constitution provides for woman suffrage.

Education. The present educational system dates from 1890, when a uniform system of public schools was established, taking the place, to quite an extent, of schools that had been maintained by various church organizations. High schools are supported in all of the larger towns and cities, and there is a state university at Salt Lake City, with which



the state normal school is connected. The state agricultural college is at Logan, with experiment stations in the Saint George region and at Nephi. The Mormon Church also has an educational system peculiarly its own, and well organized. At the head of this are the Latter Day Saint's University, in Salt Lake City, Brigham Young College, at Logan, and Brigham Young Academy, at Provo. Schools are also maintained by other denominations.

Institutions. Penal and charitable institutions are under the control of boards appointed by the governor. They include an industrial school at Ogden, a hospital for the insane at Provo City, a school for the deaf and blind at Ogden, and a state penitentiary at Salt Lake City.

History. The first white visitors to Utah were the members of Coronado's expedition in 1540, but the territory was not settled for nearly three hundred years. In 1824 Great Salt Lake was discovered by James Bridger, and soon afterwards trading posts were set up in its vicinity. The real history of Utah begins with the coming of the Mormons in 1847. In the following year the United States gained possession, under the Treaty of Guadalupe Hidalgo, and in 1849 a constitution for the "State of Deseret" was adopted. Though Congress refused admission to the new state, it organized the Territory of Utah, including a much greater area than the state now has. The attempt of the Mormons to keep other settlers out of the territory led to an expedition of Federal troops in June, 1858, which took possession of Salt Lake City. The practice of polygamy among the Mormons was viewed with disfavor by Congress, and a law making it a crime was passed in 1862, but was not seriously enforced for many years. Finally, twenty years later, the Edmunds bill, disfranchising polygamists and placing the territory under a commission of five men, was passed. This was made more stringent in 1887 and again in 1890, but in the latter year the Mormon Church declared that it no longer countenanced polygamy. Finally, in 1894, a constitution was adopted, and the state was admitted to the Union two years later. Prohibition was voted for the state in advance of national action.

Related Articles. Consult the following titles for additional information:

CITIES

Logan
Ogden
Provo City
Salt Lake City

PHYSICAL FEATURES

Colorado River
Great Salt Lake
Uinta Mountains
Utah Lake

UNCLASSIFIED

Dry Farming
Irrigation
Mormons
Polygamy
Young, Brigham

Items of Interest on Utah

The state motto of Utah is the word *Deseret,* meaning *industry.* Utah's flower emblem is the sego lily.

Statewide prohibition was adopted in 1917.

School attendance for thirty weeks annually is compulsory for children from eight to sixteen years, who live in large cities. Elsewhere the required attendance is for twenty weeks. There are about 650 public elementary schools and nearly fifty public high schools.

The constitution provides for the initiation of any desired legislation by the legal voters or such number of them as may be determined by law.

Among the points of scenic interest is a pulpit-shaped rock in Echo Canyon. It is said that Brigham Young preached in this pulpit his first sermon to the Mormon colonists.

In 1915 there was an uprising of the Indians on the Piute Reservation. To settle the difficulty General Hugh Scott was sent out by the government.

Four barrels of the water of Great Salt Lake will produce, after evaporation, nearly a barrel of salt.

Questions on Utah

What is peculiar about the boundaries of Utah?

Describe briefly the surface and drainage.

What artificial aids are necessary to agriculture in Utah?

What are the principal crops?

How does Utah rank as a producer of beet sugar?

How does Utah rank in the production of silver? Copper? Lead? Name two other important mineral products.

What are the principal commodities shipped to points outside the state?

What are the principal manufacturing industries?

What sensation do swimmers in Great Salt Lake experience?

In what year did the Mormons emigrate to Utah?

What can be said of the great natural bridges in the state?

UTAH, UNIVERSITY OF, a state university established at Salt Lake City in 1850, as the University of the State of Deseret. Soon after its establishment, the school was closed until 1867, owing to lack of funds. The present charter was secured in 1891, when a grant of sixty acres of land and a state appropriation of $300,000 for buildings were made. At that time the present name was adopted. The university maintains a school of arts and science, a state school of mines, schools of education, medicine, law and commerce and finance, and the state normal school. The faculty has a membership of over 100, and the student enrollment is about 1,200. There is a library of over 50,000 volumes. The legislature has made liberal grants for improvements, and has provided a state tax to insure a regular income.

UTAH LAKE, a fresh-water lake in the north-central part of Utah, about twenty-four miles in length and eight miles in width. It is situated in a valley bordered by mountains, and it discharges into Great Salt Lake through the Jordan River.

UTE, a tribe of Indians of the Shoshonean family, formerly scattered throughout New Mexico, Utah, Colorado and Nevada, where they carried on a relentless warfare with the Navajos. They were a restless tribe, living by hunting and fishing, but rarely engaging in agriculture. They are at present confined to an Indian reservation in Colorado, and number about 2,000.

U'TICA, an ancient Phoenician city of North Africa, located on the Gulf of Tunis. Though subject to Carthage, it for a long time resisted that authority successfully, and was never contented under Carthaginian rule. In the third Punic War Utica submitted to Rome, and after the fall of Carthage was made the capital of the province of Africa. It was at Utica that Cato killed himself, after Caesar's victory at Thapsus. The Arabs destroyed the city in the seventh century. It was excavated by the French engineer, Daux, in 1869.

UTICA, N. Y., the county seat of Oneida County, ninety-five miles northwest of Albany, on the Mohawk River, and the Erie Canal and on the New York Central, the West Shore, the Delaware & Lackawanna and the New York, Ontario & Western railroads. It is the gateway to the Adirondack region and a center for tourists. It has an elevation of about 500 feet above the sea, and

is laid out with wide streets. The city is famed for its magnificent old elms. Fine state roadways radiate in all directions.

There is a large public library, besides that of the Oneida Historical Society, and law, medical, Y. M. C. A. and Hebrew libraries. The Utica Catholic Academy, Assumption Academy, the New School and a number of other private schools are located here. An unusual number of charitable institutions have caused the place to be called the "City of Charities." They include the Saint Luke's Homeopathic, the Faxton and the general hospitals; a state hospital for the insane; Saint Elizabeth's Hospital and Home; the state Masonic Home and various homes for orphans, aged and homeless. The school buildings of the city are among the best in the state, and the educational standard is high. Other prominent structures are a county courthouse, a state armory and a Federal building.

Utica has good transportation facilities, and is an important commercial and industrial center. It ships large quantities of cheese and other dairy products, roses, fruit, live stock and manufactured goods. The principal manufactures are men's clothing, hosiery and knit goods, cotton and woolen goods, furnaces, machine shop and lumber products, farm implements, paints, fire extinguishers, automobile parts, cutlery and iron pipe.

During the French and Indian War a fort was erected on this site to control the fording place on the Mohawk. It was named in honor of Philip Schuyler. A settlement grew up and was known as Old Fort Schuyler until its incorporation as the village of Utica in 1798. The city was chartered in 1832. Population, 1910, 74,419; in 1917, 89,272 (Federal estimate).

UTILITA'RIANISM, a term given to that system of ethics and philosophy whose fundamental principle is that the standard of right and wrong is the happiness of mankind; that is, that an act is good only to the extent that it proves itself serviceable in promoting the welfare or happiness of society. This theory is of modern origin, having been first definitely stated by John Stuart Mill and accepted by such later philosophers as Spencer and Sir Leslie Stephen. However, it is the natural outgrowth of the philosophy of such men as Hume, Locke, Bentham and Hobbes. See PHILOSOPHY.

UTO'PIA, from a Greek word meaning *no place,* is an ideal country where all things are perfect. The term is taken from the title of a political romance written by Sir Thomas More, in 1516, describing the state of society on an imaginary island where all the property belonged to the commonwealth, to which every one contributed by his labor and from which he received his supplies. Its mild penal code was in striking contrast to that which prevailed at that period in England. The people had learned to tolerate diversity of opinion in religious matters. Promotion was according to merit, and the citizens rose through all the gradations of their existence, from form to form, as in a great public school. *Utopia* was published in Latin in 1516, and was later translated into English by Bishop Burnet. It attained a wide popularity, its name furnishing the familiar epithet *Utopian,* which is commonly applied to idealistic projects of reform in religion, government or society.

UTRECHT, *u' trekt,* NETHERLANDS, capital of the province of the same name, situated on the Rhine, where it branches into the Old Rhine and the canalized Vecht. It lies twenty-three miles southeast of Amsterdam, and is the chief railway center of the Netherlands. It is strongly fortified, according to belief prior to 1914, for it was the outpost of defense for Amsterdam. The University of Utrecht, dating from early in the seventeenth century, is located here. Its library contains over 250,000 volumes. The city also has a number of learned societies, a museum of paintings by the old masters and an archiepiscopal museum, which contains a collection of sacred relics. The Gothic Cathedral of Saint Martin, rising in the center of the city, is the most prominent edifice.

The principal industries are the manufacture of carpets, velvets, floor cloths, cottons, linens, cigars, chemicals, musical instruments and machinery. The trade is important. In this city, in 1579, the Union of Utrecht was formed, establishing the Dutch Republic. In 1713 the Peace of Utrecht was concluded here, terminating the War of the Spanish Succession. Population, 1911, 121,317.

UTRECHT, PEACE OF, a series of treaties agreed upon at Utrecht, between the years 1713 and 1715, by the powers that had been engaged in the War of the Spanish Succession. This was the most important political adjustment between the Peace of Westpha-

lia (1648) and the Congress of Vienna (1815).

By its provisions, Austria and Holland on the north, Prussia on the east and Savoy on the southwest were secured from French aggression. A treaty between France and England recognized the Hanoverian line of kings, engaged never to unite the crowns of France and Spain, and ceded to England Nova Scotia, Newfoundland and Hudson Bay and Strait. Gibraltar and Minorca were ceded to England by Spain, which also transferred Naples, Milan, Sardinia and the Spanish Netherlands to France. The Dutch were allowed to garrison eight frontier towns in the Austrian Netherlands as protection against France, and were given important trade privileges. France surrendered Lorraine and certain cities on the right bank of the Rhine, retaining Alsace, with Strassburg. The Prussian king received confirmation of royal title and the Duke of Savoy was raised to kingly dignity. England received trade concessions which laid the basis of a lucrative slave trade with Spanish America.

It is from the Treaty of Utrecht that England dates its commercial and colonial expansion. See SUCCESSION WARS, subhead *War of the Spanish Succession.*

UZ, in the Old Testament, the scene of the story of Job, a region probably lying east or southeast of Palestine.

V, the twenty-second letter of the English alphabet, was used interchangeably with *u* in Latin, and in English until the seventeenth century. The sound of *v* is always the same, and the letter which is most closely allied to it is *f*, with which it is often interchanged in related languages. In English this close connection of the two letters is shown by the plural of such words as wi*f*e, wives; hal*f*, hal*v*es.

As a Roman numeral, V means five; with a line above it, it stand for 5,000.

VACATION SCHOOLS. The long summer vacation for public school pupils, especially in the congested sections of cities where there are no playgrounds, has been found to be anything but beneficial to the children. Many of the large cities now maintain schools in such centers for a portion of the vacation, and these are known as vacation schools. Some of the branches taught are the same as those in the regular course of study, but usually more time is given to industrial training and to recreation. The girls are taught sewing and cooking; the boys, woodwork or some other occupation. Some schools offer work of the regular term for pupils who failed of promotion. In schools having a large number of pupils of foreign parentage, special emphasis is placed upon English. Vacation schools are popular, and usually the number of applicants for admission far exceeds the capacity of the buildings.

VACCINATION, *vak se na'shun*, inoculation with the cowpox—a disease akin to, but much less severe than, smallpox—in order to prevent a person from catching the latter, or to make the attack much less severe. The principle upon which vaccination is based is that if one acquires the disease in a mild form, antitoxins for the cure of the disease will be manufactured in the blood and render that person immune from the attacks of smallpox for several years. The practice of vaccination was introduced by Edward Jenner, an English physician, and it soon came into common use.

The usual method in vaccination is to make, upon the upper part of the arm, a few scratches across one another, with a clean lancet point. The virus from cowpox eruptions is then rubbed on the skin where the scratches have been made. If the vaccination proves successful, a small inflamed sore appears about the third day and increases in size until the tenth day. On the eighth day the constitutional effects manifest themselves by a slight pain in the part, headache, shivering and loss of appetite. These subside in one or two days. Afterward the fluid in the pustule dries up, and a scab forms, which disappears about the twentieth day, leaving a scar in the skin. Few things have been more definitely proved in medicine than that vaccination is a preventive of smallpox. To secure perfect immunity, repeated vaccinations at intervals of several years are necessary in most cases.

There is no danger in vaccination if pure virus is used and if the wound is kept free from infection. The wise plan is to have the vaccination made by a good physician, who will treat the wound properly and prevent any injurious results.

VACCINE THERAPY, *vak'seen ther'a pi*, a method of medical treatment for combating diseases caused by bacteria. The treatment is based upon the principle that injection into the system of killed bacteria that produce the disease will develop in the blood another sort of bacteria that will destroy the disease-producing bacteria. The vaccines are usually prepared by placing some fluid of the body containing the disease-producing bacteria in some substance in which the bacteria will grow rapidly, then purifying this "cul-

ture" and treating it with a preservative. The vaccine is injected hypodermically, and works in a few hours. This method of treatment is successful in such diseases as carbuncle, ulcers, typhoid fever, tuberculosis and asthma. See SERUM THERAPY.

VAC'UUM, a term usually applied to a space from which air or other gases have been exhausted. An absolute vacuum is impossible, since however completely the gases may be exhausted, the space will still be filled with ether (see ETHER). However, in the ordinary use of the term, a vacuum is said to be produced when the air is removed from space as completely as possible by means of an air pump. Such vacuums are sufficiently perfect for common experiments. The most perfect vacuum formed in practice is that above the mercury in a barometer tube, produced by filling the tube with mercury and allowing it to settle until the column sustained is equal to the weight of an equal column of atmosphere (see BAROMETER). Other practical applications of the vacuum are found in the vacuum brake and the vacuum pan. See AIR BRAKE; VACUUM PAN.

VACUUM CLEANER, a device for removing dust from floors, walls and hangings by means of rolling brushes and air suction. Small cleaners propelled by hand or capable of being attached for power to electric sockets are in use in individual households. For larger buildings an air pump mounted on a truck and run by a gasoline engine may go from door to door, carrying the dust to a box in the truck by means of a large hose. Office buildings are commonly equipped with stationary engines, run by gasoline or electricity and operating a pump connected with a system of pipes leading to the different floors.

The use of the vacuum cleaner is a distinct advance in the matter of sanitation, as the former method of sweeping with brooms scattered the dust and was a means of spreading contagion.

VALDAI, *val dī'*, **HILLS**, a group of hills in West Central Russia, forming the chief watershed of that part of Europe. They consist of hills and plateaus, with an average altitude of from 8,000 to 9,000 feet. Formerly covered with forests, they are now cleared and cultivated. They contain the sources of the Volga, the Dnieper and the Duna.

VALENCIA, *val len'she ah*, SPAIN, the third city in population in the country, situated on the Guadalaviar River, three miles from the Mediterranean. Its history dates to 138 B. C. It was destroyed by Pompey of Rome, and was captured by the Visigoths in 413 and by the Moors in 714. From 1021 to 1238 it was the capital of an independent Moorish kingdom. In its modern aspect it is a picturesque mixture of Moorish architecture and modern streets and plazas. The University of Valencia, founded in 1411, is one of the foremost in Spain. The harbor is secure and well equipped to accommodate commerce and the city is an important railway center. The leading industry is the manufacture of silk, and the place is also noted for the making of colored tiles. Fruit raising is extensively carried on in the surrounding country.

VA'LENS (328–378), Roman emperor of the East, associated in power with his brother Valentinian I. The chief event of Valens' reign was a war with the Goths, who, driven southward by the Huns, had received permission to settle on Roman territory. Irritated, however, by the treatment they received at the hands of the Roman officials, they soon took up arms and destroyed Valens and the greater part of his army.

VAL'ENTINE, SAINT, a saint of the Roman calendar, said to have been martyred in A. D. 306. The custom of choosing valentines on his day (February 14) has been accidentally associated with his name. On the eve of Saint Valentine's day, young people of both sexes used to meet, and each of the men drew from a number of names of the opposite sex. Each gentleman thus got a lady for his valentine, and he became the valentine of a lady, to whom he was bound to be faithful for a year. A similar custom prevailed in the Roman Lupercalia, to which the modern custom has, with probability, been traced. The day is now celebrated by sending through the post, sentimental or ludicrous missives, specially prepared for the purpose.

VALENTIN'IAN I (321–375), on the death of Jovian, in 364, chosen emperor of Rome by the army, therefore one of the "barracks emperors." He shared the empire with his brother Valens, who ruled in the East. Although chiefly occupied throughout his reign in repelling invasions of the barbarians, he proved himself a firm and just ruler, instituting many political and social reforms. His sons, Gratianus and Valentinian II, succeeded him.

VALENTINIAN III, Roman emperor from 425 to 455. He was made emperor by Theodosius II, his grandfather, but never really exercised the imperial power, leaving it in the hands of his mother, Placidia, until her death in 450, and then largely in the hands of the eunuch Heraclius. Although the barbarians who were constantly harassing the empire were repeatedly defeated by Aëtius, general of the army, Spain, Africa, Gaul and other provinces were lost to Rome during Valentinian's reign, and the empire grew steadily weaker. Valentinian was assassinated.

VALE'RIAN, a medicinal plant, native to Europe and Northern Asia, growing abundantly by the sides of rivers and in ditches and moist weeds. The aromatic, volatile oil obtained from its roots is used as a stimulant in the treatment of nervous and circulatory disorders.

VALHAL'LA, in Old Norse mythology, the palace of immortality, inhabited by the souls of heroes slain in battle, and carried hither by the swift Valkyries. Here they spent their time in drinking and feasting and fighting furious battles; their wounds, though often serious, were healed every night. The name Valhalla is applied figuratively to any edifice which is the final resting place of many heroes. See VALKYRIES.

VALKYRIES, *val kir'eez,* in Old Norse mythology, the maiden attendants of Odin, who, at his command, rode over battlefields and bore the souls of the bravest of the slain to Valhalla, Odin's great hall. Here the Valkyries waited upon the heroes, serving them mead in vessels made from skulls. The Valkyries were sometimes regarded as the personification of clouds, especially of storm clouds. See VALHALLA.

VALLADOLID, *vahl ya do leed',* MEXICO. See MORELIA, MEXICO.

VALLEJO, *val ya'ho,* CALIF., a city of Solano County, situated on the northeastern shore of San Pablo Bay, twenty-three miles northeast of San Francisco, on the Southern Pacific railroad. It has a fine, deep harbor, which admits the largest ocean ships, and is an important shipping point for grain. Its leading establishment is the Mare Island Navy Yard. There are also flour mills and tanning yards. The city is built on the slopes of a hill, and the surrounding country is devoted to the raising of fruit. The public institutions include an orphans' home, Saint Vincent's Academy, a sailors' clubhouse, a Carnegie Library and a city hall. The city was founded in 1851 with the intention of making it the capital of the state. The legislature met here in 1851, in 1852 and for a time in 1853. The commission form of government was adopted in 1911. Population, 1910, 11,340; in 1917, 13,803 (Federal estimate).

VAL'LEY, low land between mountains, hills or bluffs. The largest and most important valleys have been formed by the upheaval and folding of the earth's crust. Such valleys are found among mountain systems, and are called *intermontane* valleys. They are long and narrow, and their floor may have an elevation several hundred or several thousand feet above the sea level. The simplest valleys of this sort are found in the Jura Mountains, where the strata were not broken in folding and where the slopes are remarkably uniform and even. Many of the so-called basins in the Rocky Mountain plateau are also valleys formed by the folding of strata, but most of these are irregular and are caused by transverse ranges, showing that the movements by which they were formed were very complex.

A VALKYRIE

Valleys running parallel to the mountain ranges are known as *longitudinal* valleys, those running across the ranges are *trans-*

verse valleys. Transverse valleys may be due to breaks in the folded strata, but most of them have been formed by erosion. They are usually narrow, with very steep sides, and the floor is only wide enough for the stream which flows in it. When of high altitude these valleys are known as *passes*. Among the most celebrated of these passes are the Kabul Pass in the Himalayas and the Simplon Pass. When of low altitude, transverse valleys are frequently known as *water gaps*, as the Delaware Water Gap.

Valleys in volcanic regions are usually due to volcanic action and are found in the side or on the summit of mountains, around the crater. They are small and of comparatively little importance. *River* valleys are formed by erosion, but their location was first determined by the formation of mountains and valleys by folding. Glacial valleys are those which have been formed or modified by the action of glaciers. They are found in mountainous regions, and most of them were undoubtedly river gorges, previous to the glacial period. The lochs and firths of Scotland are good illustrations.

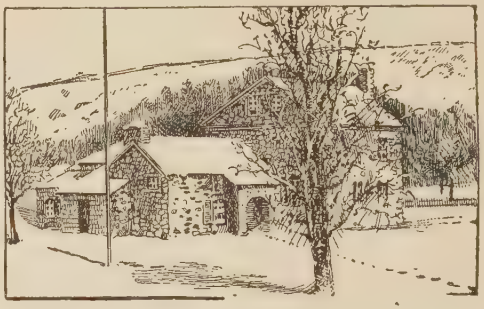
Drowned valleys are those partially under the sea, and are formed by the lowering of the coast. The fiords of Norway, Delaware Bay and the Gulf of Saint Lawrence are good examples.

Related Articles. Consult the following titles for additional information:

Canyon	Glaciers
Fiord	Mountain

VALLEYFIELD, QUE., on the Grand Trunk and the Saint Lawrence & Adirondacks railways, is the western terminus of the Beauharnois Canal. The town has large cotton and flour mills, paper, biscuit, gasoline motor, glove, clothing and cigar factories. It is the seat of a Roman Catholic bishop. Considerable lumbering and iron mining are done in the vicinity. Population, 1916, 9,449.

VALLEY FORGE, a village in Chester County, Pa., famous as the site of the quarters of the American colonial army under George Washington in the winter of 1777 and 1778. The army was 11,000 strong when it went into camp, December 17, but owing to mismanagement on the part of the quartermaster-general and the commissary department the supplies were totally inadequate, and fully half the men were soon unfit for duty. The suffering of the soldiers during the winter and following spring was almost incredible and tried the patriotism of even the most loyal friends of the colonial cause. Washington remained with his men throughout this period and with the aid of Baron Steuben finally



WASHINGTON'S HEADQUARTERS AT VALLEY FORGE

succeeded in bringing the army to a high state of efficiency. Camp was broken June 18, 1778. The site is now partially included in a tract preserved by the state and known as Valley Forge Park.

VALOIS, *val wah'*, a dynasty ruling in France from 1328 to 1589, having its origin in the circumstances by which Philip III, in 1285, gave the county of Valois to his younger son, Charles. Upon the extinction of the Capet dynasty, in 1328, the eldest son of this Charles of Valois ascended the French throne as Philip VI. The elevation of the House of Valois to the throne of France gave rise to the series of long and bloody conflicts with England known as the Hundred Years' War.

VALPARAISO, *val pa ri'zo*, CHILE, the capital of the province of Valparaiso and the chief port of the country, situated on the Pacific Ocean, sixty-eight miles northwest of Santiago. It has a commodious harbor, protected by a newly-constructed breakwater, and is connected by regular lines of steamers with leading American and European ports. It is strongly fortified, and has a large naval arsenal.

Back of the harbor rise hills and mountains, on the lower slopes of which is the newer residence portion of the city. The lower town contains the business section and city park. The buildings are mostly constructed of stone and are of a substantial character. The educational institutions include a naval school, a number of colleges and a school for marines. The city maintains a hydrographic bureau and a museum of natural history. The industrial establishments include foundries, machine shops, bottling works, distilleries, sugar refineries and rail-

road shops. The principal exports are grain, wool, leather, guano, saltpetre and copper; the imports are textile and other manufactured and mineral products.

Valparaiso was founded by Juan de Saavedra in 1536. It has been visited by several disastrous earthquakes, the latest being that of August 16 and 17, 1906, which destroyed a large part of the city, killed more than a thousand persons and rendered at least 75,000 homeless. Population, 1910, 179,815.

VALPARAISO UNIVERSITY, an educational institution at Valparaiso, Ind., founded in 1873 for the purpose of securing university advantages for students of limited means. There are no entrance requirements, and tuition and boarding fees are below the average. There are between twenty-five and thirty departments, offering general and professional courses. In normal years about 6,000 students are in attendance, and the faculty numbers over 200. The library contains about 17,000 volumes. Valparaiso University is coeducational and nonsectarian. It has law and medical departments in Chicago.

VALUE. See SUPPLY AND DEMAND.

VALVE, a device, as a cap, ball or slide, for the purpose of controlling the flow of liquids, steam, gas or loose material through pipes, tubes or chutes. As to the method of their operation, most valves may be included in this general classification: (1) valves opened and closed by hand; (2) those operated by independent mechanism; (3) those operated by mechanisms connected with the machine whose operation they control; and (4) those opened and closed by the motion of the fluid whose flow they control. Valves may rotate, rise and fall from their seats or open and close by sliding on and parallel to their seats. In the human anatomy the loose flap or fold of lining membrane which regulates the flow of the blood and other bodily fluids is called a valve. See PUMP; STEAM ENGINE.

VAM'PIRE, in Slavic folklore, a corpse which leaves its grave during the night and sucks the blood of living human beings, particularly of young people and children. The victims gradually lose strength and finally die from no apparent malady, while the corpse retains the appearance of a living being. The belief in vampires is an ancient one, fostered by the medieval Greek church as a means of terrifying the people into godly behavior. It still persists in the locality of the lower Danube, where heretics, outcasts and criminals are still supposed to become vampires at death.

Figuratively, a vampire is a person who in any way preys on another. Kipling's poem, *The Vampire,* characterizes the parasitic woman.

VAMPIRE BAT, a Central and South American bat which takes its name from the habit of some of the species of sucking the blood of the cows, horses, and even men, attacking them in their sleep. These bats are of small size, are tailless, and have a pair of upper scissors elongated and sharpened to pierce the skin of their victims. They have gullets so small that only a liquid diet is possible, and the intestinal canal is modified to accommodate a diet of blood. The destructive qualities of these bats, however, have been greatly exaggerated.

VANA'DIUM, a silvery-white metallic element, extracted by difficult processes from a number of minerals. It is of value as an alloy in the manufacture of steel, especially that used in automobile construction, because it increases elasticity and tensile strength. Certain vanadium salts yield compounds that produce intense, permanently black pigments that are combined with aniline in the manufacture of dyes and also as the basis of black writing fluids.

VAN BUREN, MARTIN (1782–1862), an American statesman, eighth President of the United States. He was the close friend and the successor of Andrew Jackson, to whom he owed his nomination by the Democrats. Van Buren was totally unlike his imperious, outspoken predecessor. He was slight of figure, courteous, mellow-voiced and soft-spoken, yet beneath his placidity of manner there lay individuality, a firm will and strength of character. Tactful and conciliating as he was, Van Buren could fight doggedly for principle, and notwithstanding his strong sense of party loyalty, he could break with his party when his conscience so dictated. His administration is noteworthy chiefly for the establishment of the independ-

ent treasury system, the result of his own tireless efforts. At the time he gained little credit for this achievement, but historians of to-day find this the outstanding feature of his career as President.

Early Life. Martin Van Buren was born at Kinderhook, Columbia County, New York, on December 5, 1782. He was the son of a small farmer. He attended the local schools until he was fourteen, after which he became office boy for a neighborhood lawyer, rising to the positions of clerk, copyist of pleas and special pleader in the constables' courts. After six years of such training he entered a New York law office, and in 1803 was admitted to the bar. He then entered into a partnership with his half brother, James Van Allen, in Kinderhook, where he was soon a conspicuous figure in local Democratic (then called Democratic-Republican) politics. Within the next few years Van Buren advanced rapidly in his profession, becoming probate judge in Columbia County, in 1808, and holding that position until 1813.

Political Advancement. In 1812 Van Buren was elected to the state senate of New York, and in 1815, while still a member of that body, was appointed attorney-general. He was reëlected to the senate for the term 1816–1820, but lost his position as attorney-general in 1819 because of a political disagreement with Governor De Witt Clinton. Throughout this period he was steadily gaining in power of leadership, and in 1820 was successful in securing the reëlection of Rufus King to the United States Senate. The following year he himself won a seat in that body.

Van Buren remained in the Senate until 1828, when he was elected governor of New York. In the Senate he had favored strict construction of the Constitution on all questions, and as a member of the finance committee and chairman of the judiciary committee he had made a good impression by his sincerity and moderation. His career as governor is of special interest to-day, in that he advocated two principles whose wisdom is more appreciated at present than in his time. In the first place he opposed free banking, and advocated a system whereby all the state banks would become "mutual insurers of each other's soundness." This plan is a feature of the present Federal Reserve system. Secondly, he recommended that state and national elections be separated. While this principle has not been extensively adopted, its soundness is generally accepted.

In the Presidential election of 1828, Van Buren effectively supported Andrew Jackson, whom he warmly admired, and in 1829 the latter rewarded him with the most important place in his first Cabinet, that of Secretary of State. Van Buren retained this office long enough to settle a disagreement between England and the United States with respect to the trade of the West Indies.

He resigned in 1831 and soon accepted the post of minister to England, but as a bit of party politics the Senate Whigs succeeded in holding up the nomination after the appointee had sailed. It was known in political circles that Van Buren had resigned in order not to jeopardize his chances for the Presidential nomination in 1836, to which he was looking forward. The Whigs hoped to discredit him by their maneuver, but the pretext which they used was so feeble that their act served only to increase Van Buren's popularity. In 1832 he was elected Vice-President on the ticket with Jackson, and was in line for the nomination for President on the expiration of Jackson's second term. The Whigs were badly split, and in the electoral college in 1836 the party vote was divided among William Henry Harrison, Hugh L. White of Tennessee, Daniel Webster and W. P. Mangum of South Carolina. Van Buren had 170 votes against seventy-three for his nearest rival, Harrison.

Administration. The new President fell heir to a legacy of financial chaos, and his whole administration was clouded by that issue. President Jackson, in 1833, had removed the funds of the government from the United States Bank, practically putting an end to the institution, which he regarded as a symbol of the "money power." The funds had been distributed among certain "pet banks," which used them in unsound speculation. Subsequently, Jackson issued a "specie circular" requiring that gold and

MARTIN VAN BUREN

Administration of Martin Van Buren, 1837-1841

I. The President
- (1) Birth
- (2) Education
- (3) Early career
- (4) Later life
- (5) Character
- (6) Death

II. The Panic of 1837
- (1) Causes
  - (a) Over-speculation in land
  - (b) Expenditures for internal improvements
  - (c) Panic in England
  - (d) Failure of the wheat crop
  - (e) Wild-cat banking
- (2) Effects
  - (a) High prices of necessaries
  - (b) Bank and brokerage failures
  - (c) Business failures
  - (d) Distress among the poor
  - (e) Suspension of specie payments
- (3) Led to independent treasury

III. Domestic Affairs
- (1) Slavery agitation
  - (a) Riots and demonstrations
    - (1) Murder of Lovejoy
    - (2) Garrison mobbed in Boston
- (2) Second Seminole War
  - (a) Skirmishes and raids
  - (b) Capture of Osceola and other chiefs
  - (c) Zachary Taylor's force defeats Indians at Okechobee swamp
- (3) Oregon settlements
  - (a) Mostly by Hudson Bay Company
  - (b) Americans were missionaries
- (4) The Mormons in Missouri
  - (a) Control of the government by the Mormon church
  - (b) Troubles at Kirtland
  - (c) Driven out of Missouri
- (5) Riots and disorder
  - (a) The "buckshot" war
  - (b) The "broad seal" war
  - (c) Anti-rent or "patroon" war
  - (d) Canadian rebellion
    - (1) Attempts to enlist American aid
    - (2) Strict neutrality of the United States
    - (3) The Caroline affair
- (6) Great inventions and discoveries
  - (a) Friction matches, 1838
  - (b) Magnetic telegraph
  - (c) First photograph taken
  - (d) Vulcanized rubber

IV. Quarrel with Mexico
- (1) Causes
  - (a) Property of Americans in danger
  - (b) United States vessels seized
  - (c) United States citizens imprisoned and executed
- (2) Mexico resented recognition of Texan independence

V. Election of 1840
- (1) Issues
- (2) Candidates

Questions on Van Buren

When was Martin Van Buren born? In what state?

What profession did he adopt?

What public offices did he hold before 1837?

What can you say of his abilities and character?

What were the principal causes of the panic of 1837? Give details of each as far as you can.

What were some of the immediate effects of the panic?

What is meant by the independent treasury or subtreasury system?

Who was Elijah Lovejoy? Where did he live?

Give a brief summary of the career of William Lloyd Garrison.

What future President took a prominent part in the second Seminole War?

Who was the founder of the Mormon sect?

Name three inventions perfected during Van Buren's administration.

VAN BUREN'S ADMINISTRATION

·1837-1841·

THE GREAT
FINANCIAL PANIC
·····OF 1837·····
THE
SUBTREASURY SYSTEM
·ESTABLISHED·

THE ALTON RIOTS
·1837·

THE
CANADIAN REBELLION
·1837·

CHEROKEE INDIANS
REMOVED TO INDIAN TERRITORY
·1838·

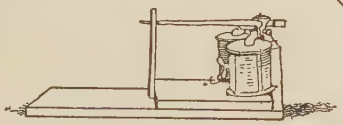
PROCESS OF
VULCANIZING RUBBER
DISCOVERED IN
·1839·

FIRST NORMAL SCHOOL
OPENED IN MASS.
·1839·

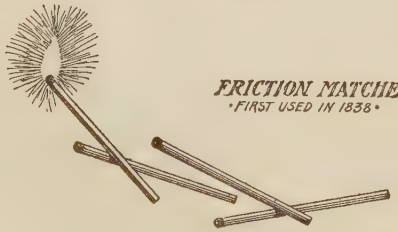
SUBTREASURY BILL PASSED
·1840·

6TH CENSUS-POPULATION,
17,069,453
·1840·

MAGNETIC TELEGRAPH
PATENTED-1837-



FIRST PHOTOGRAPH
TAKEN IN AMERICA···
·1839·



FRICTION MATCHES
·FIRST USED IN 1838·

VICTORIA CROWNED

THE
SEMINOLE
·WAR·

3738

silver be paid for public lands, which drained the banks of their reserves and caused many failures. It was a period of credit inflation, reckless issuance of paper money and extravagant expenditures for public improvements, and in 1837, shortly after Van Buren began his term, a disastrous panic overwhelmed the nation.

The President called Congress in special session, and in his first message, September 1, 1837, outlined his policy. After explaining the causes of the panic, he presented his plan for an independent treasury, whereby the control of national finances would be divorced from private banking and the government would be the custodian of its own funds, as it is to-day. For three years he labored to have this policy adopted; not until July, 1840, did he succeed in persuading a reluctant Congress to pass the law which he regarded as a sort of "second Declaration of Independence." Except for a short interval under the Whig régime, the independent treasury has remained a permanent national institution.

Though the financial issue overshadowed all others, it is not true that Van Buren's term was in other respects uneventful. The slavery issue, becoming yearly more entangled with politics, was the cause of such disturbances as the murder of Elijah Lovejoy at Alton, Ill., and the mobbing of the great abolitionist, William Lloyd Garrison. There were outbreaks in New York against the landlords, or patroons, and in Missouri against the Mormons; in Florida a desperate war with the Seminoles was waged. A rebellion in Canada and the establishment of the republic of Texas caused disturbances along the international boundaries, north and south.

Van Buren was not responsible for these conditions, but they reacted against him, and with the prevalent hard times served to make his administration and the Democratic party extremely unpopular. He also alienated many voters by refusing to aid the Canadian rebels, though time has vindicated his attitude of strict neutrality. Considerable material progress is recorded of the period. In 1837 the magnetic telegraph was invented; friction matches were first used in 1838; in 1839 the first photograph was taken in America. In 1839, too, the process of vulcanizing rubber was invented by Charles Goodyear.

Van Buren was a candidate for reëlection, but his administration was connected with too much that was disagreeable, and he was defeated. He secured but sixty electoral votes, to 234 for the Whig candidate, William Henry Harrison. Calmly accepting his defeat, he retired to his country seat of Lindenwald in his native county.

As Ex-President. Van Buren by no means disappeared from the public eye during the last two decades of his life. In 1844 he took a firm stand against the annexation of Texas, thus losing the Democratic nomination for the Presidency, and within the next three years he came out definitely against the extension of slavery. In 1848 the faction of the Democratic party which upheld the Wilmot Proviso (which see) nominated him, against his wishes, for the Presidency, and the nomination was confirmed by a convention of "Free-Soilers." The regular Democrats nominated Lewis Cass, from whom Van Buren pulled enough votes to give the election to Zachary Taylor. Van Buren received about 300,000 popular votes, but he carried no state. He remained a Democrat to the end of his life, but his sympathy for the anti-slavery cause made him a firm supporter of Lincoln after the outbreak of the Civil War. He died in the second year of the struggle, and was buried at Kinderhook, N. Y.

Related Articles. Consult the following titles for additional information:

Garrison, William Lloyd
Lovejoy, Elijah P.
Political Parties in the United States
Seminole
Texas (history)
Treasury Department

VANCOUVER, *van koo'ver,* B. C., the fourth largest city of Canada and the metropolis of the province, is situated on Burrard Inlet, an arm of the Strait of Georgia. Vancouver is the western terminus of the Canadian Pacific Railway, and it was laid out by that railway corporation in 1885. It is now the terminus of four other lines of railway—the Canadian Northern, the Northern Pacific, the Great Northern and the Pacific Great Eastern. It is also the western terminus of the British Columbia Electric Railway, which extends to Chilliwack and New Westminster. The city is on one of the best harbors in the world, and has regular steamship connection with China, Japan and other ports of the Orient. It also has a coastwise trade with Alaska and the Pacific ports of the United States.

The prominent buildings include the Bank of Montreal, the Canadian Bank of Commerce, the Merchants' Bank, the customhouse, public library and courthouse. The University of British Columbia, the leading

THE PUBLIC BUILDING, VANCOUVER.

educational institution of the province, is located here. Stanley and English parks, the former having an area of 600 acres, add much to the beauty of the city.

Vancouver is the nearest North American port to the Orient, and it has a large wholesale trade exceeding $50,000,000 a year. It is also an important manufacturing center. The principal manufactures include lumber and lumber products, structural steel, wooden and steel ships, furniture, machinery and refined sugar. Population, 1911, 100,401; in 1916, estimated 140,000.

VANCOUVER, George (1758–1798), an explorer and discoverer. He accompanied Cook on several of his voyages, and later was in command of an expedition to explore Australia and New Zealand. From there he sailed by way of the Hawaiian Islands to North America, where he surveyed, in a period of two years, the coast from 35° to 56° North latitude. Vancouver Island was named after him. He sailed for England via Cape Horn and Saint Helena, and died shortly after his arrival at his home in Surrey.

VANCOUVER, Wash., the county seat of Clarke County, five miles north of Portland, Ore., on the Columbia River and on the Northern Pacific, the Great Northern, the Oregon-Washington Railway & Navigation Company, and the Spokane, Portland & Seattle railroads. It is the United States military headquarters for the department of Columbia. Vancouver lies in a section of large forests and farming lands. The leading industrial plants include a saw mill, a flour mill, an ice plant, a creamery, a cannery, car-repair shops, brickyards, box factories and fruit-packing plants. The state schools for the blind and the deaf and Saint Joseph's Hospital are located here. Notable buildings are a Carnegie Library, the United States National Bank Building, and a courthouse and postoffice. A new Interstate bridge spans the Columbia River at this point. Vancouver was first settled as a post of the Hudson's Bay Company in 1828, and was incorporated as a city in 1858. Population, 1910, 9,300; in 1917, 13,805 (Federal estimate).

VANCOUVER ISLAND, an island in the Pacific Ocean, off the coast of British Columbia, of which it is politically a part. It is separated from the mainland of Canada by the Gulf of Georgia and Queen Charlotte Sound and from the United States by the Strait of Juan de Fuca. Its length is 275 miles; its greatest breadth, sixty-five miles; and its area, about 12,000 square miles. The island is generally mountainous, being a continuation of the Coast Ranges formation. It has a mild, moist climate, and in the south and east its soil is fertile and well suited to agriculture and fruit growing. The mountains are generally covered with heavy coniferous and deciduous forests. The interior is well adapted to grazing, and large numbers of horses, cattle, sheep and swine are raised. Fishing interests along the shores of the streams and lakes are of considerable importance. Mineral resources include coal, gold and copper. The coal mines are extensively worked and supply the greater part of the coal used on the Pacific coast. The chief town is Victoria, the capital of British Columbia. The island was visited by Vancouver, an officer of the British navy, in 1792, and was named for him. The United States claimed it, but when the Oregon boundary question was settled in 1846, it became a possession of Great Britain.

VAN'DALS, an ancient Teutonic people, inhabiting the region between the Vistula and the Oder, whence they moved southward and settled in Pannonia, becoming Christians of the Arian faith. At the beginning of the fifth century they entered Gaul and crossed the Pyrenees into Spain. One section settled in Galicia and were almost entirely destroyed in a struggle with the Goths and Suevi; the other settled in a part of Baetica, which received from them the name *Andalusia*. In 429 they crossed the Strait of Gibraltar, under their dreaded leader, Genseric, carrying devastation and ruin from the shores of the Atlantic to the frontiers of Cyrene. In 455 Genseric and his soldiers sacked Rome, plundering and ruining temples, beautiful buildings and works of art. The word *vandal* is still applied to persons who are wilfully destructive.

VAN'DERBILT, Cornelius (1794–1877), American capitalist and financier, born on Staten Island, N. Y. At the age of sixteen he bought a boat and ferried passengers and goods across to the city. Gradually extending his enterprise, by the age of forty he had become the owner of a fleet of sound and river steamers running to Boston and up the Hudson. In 1849 he founded a steamship and transfer line by way of Lake Nicaragua to California, and during the Crimean War he established a line of ocean steamships to Havre. Because of the large fleet of boats he owned he was popularly known as "Commodore." Later he transferred his capital from steamships to railroads, obtaining a controlling interest in a large number of Eastern roads, and extending his system to Chicago by securing the Lake Shore & Michigan Southern, the Canada Southern and Michigan Central roads. At his death he left a fortune of $100,000,000 to his son, William Henry Vanderbilt. His philanthropies included a gift of a million dollars for the founding of Vanderbilt University.

CORNELIUS VANDERBILT

VANDERBILT, Cornelius (1843–1899), son of William Henry Vanderbilt, made first vice-president of the New York Central Railroad when his father succeeded to its presidency, on the death of his grandfather, Cornelius Vanderbilt, in 1877. He subsequently held directorships in more than thirty different railroad companies. He was a contributor to many educational institutions, including Vanderbilt and Yale Universities. The prized treasure of the Metropolitan Museum, New York, Rosa Bonheur's *Horse Fair*, was the gift of Cornelius Vanderbilt.

VANDERBILT, William Henry (1821–1885), son of "Commodore" Vanderbilt and his successor in the management of the Vanderbilt system of railroads, which he extended till he controlled the Michigan Central, the Lake Shore & Michigan Southern, the Canada Southern, the Chicago & North Western, the Nickel Plate and the West Shore railroad. He was considered one of the greatest authorities on transportation of his day. He gave large sums to Vanderbilt University and Columbia University.

VANDERBILT, William Kissam (1849–), son of William Henry Vanderbilt, entrusted by his father with the management of numerous responsible offices connected with the New York Central Railroad and a director in fourteen different lines. With his brother, Frederick William and George Washington Vanderbilt, he founded the Vanderbilt Clinic in New York City, and erected Kissam Hall at Vanderbilt University, in memory of their mother.

VANDERBILT UNIVERSITY, a coeducational institution, established at Nashville, Tenn., in 1872, under the auspices of the Methodist Episcopal Church, and named in honor of Cornelius Vanderbilt, who gave $1,000,000 for the purpose of establishing the school. According to its present organization, however, the university is not under sectarian management. There are maintained a college of arts and sciences, and schools of law, religion, medicine, dentistry, pharmacy and engineering. Vanderbilt University has been a strong influence in the South in keeping educational standards high. It has a student enrollment of over 700 and a faculty of about 125. There are 62,000 volumes in the library. The university has received generous gifts from the Vanderbilt family and from Andrew Carnegie.

VAN DYCK, or **VANDYKE**, *van dike'*, Anthony, Sir (1599–1641), next to Rubens his teacher, the most famous portrait painter of the Flemish school. He was born at Ant-

werp, where his father was a merchant and his mother a skilled worker in tapestry. He studied under Van Balen and Rubens and also in Genoa, Venice and Rome. Having acquired a great reputation in Antwerp as a fashionable portrait painter, he was invited to England by Charles I, who bestowed upon him knighthood and a considerable annuity. While in England he painted more than 300 portraits, his patrons including almost every distinguished person of the court. His portraits are characterized by delicacy and refinement. Those best known are *Portrait of Charles I* and *Children of Charles I* and the *Portrait of a Lady and Child.* He also painted a number of historical and mythological subjects, and his *Elevation of the Cross* and *Crucifixion* are well known. He married Mary Ruthven of the English nobility, and lies buried in Saint Paul's, London.

VAN DYKE, HENRY (1852–), American poet, essayist and educator. He was born at Germantown, Pa., and graduated at Princeton and at Princeton Theological Seminary. In 1878 he became pastor of the United Congregational Church of Newport, R. I., and five years later was called to the Brick Presbyterian Church of New York. Here he remained as pastor until 1900, when he became professor of English literature in Princeton University. Van Dyke has written extensively, and always attractively, in various fields. *The Builders and Other Poems* and *Music and Other Poems* are among his volumes of poetry. *The Gospel for an Age of Doubt* and *Sermons to Young Men* are examples of his religious work; *The Blue Flower* and *The Ruling Passion* are some of his charming works of fiction, and *Fisherman's Luck* and *Little Rivers* include his best work in the field of essays. In 1913 Dr. Van Dyke was appointed minister to the Netherlands by President Wilson, a position which he held with honor throughout the greater part of the World War. This post he resigned in 1917 before the United States entered the war. After America became a belligerent he was appointed supervisory chaplain in the navy.

HENRY VAN DYKE

VAN HISE', CHARLES RICHARD (1857–1918), an American geologist and educator, born at Fulton, Wisconsin, educated in the University of Wisconsin. Soon after graduation he became connected with the faculty of his alma mater, serving successively as instructor in chemistry, assistant professor of mineralogy, professor of geology and president of the university, to which position he was elevated in 1903. Under his administration the institution became one of the most progressive and useful schools in the United States. He was particularly effective in making extension courses available to all classes of people throughout the state.

Professor Van Hise was made a member of the United States Geological Survey in 1883. He won recognition as the highest authority on rocks of the Algonkian and Archaean Systems and especially on the ore-bearing rocks of the Lake Superior region. He was the author of a series of books on geological subjects and of *The Conservation of Natural Resources in the United States.*

VAN HORNE, WILLIAM CORNELIUS, Sir (1843–1915), railway official and expert, best known for his connection with the Canadian Pacific Railway, which was completed under his energetic and efficient management. He served that railway from 1882 to 1910 as general manager, vice-president, president and chairman of the board of directors, successively. Van Horne was born in the United States and served several mid-western railroads in that country before being called to Canada.

VANIL'LA, a genus of plants belonging to the orchid family, source of the well-known vanilla of commerce. The plants are common in Mexico, and are also found in Central and South America and the East Indies. The vanilla plant climbs by means of aerial roots and has large white, red or greenish flowers. The fruit is a long, brown, shiny bean, filled with a dark, oily, odorous pulp. This bean is gathered before it is fully ripe, and the oil is extracted by a slow process which brings out its peculiar odor and flavor. Vanilla is used in medicine as a

VANILLA

stimulant, but its chief use is in the preparation of liquors and perfumery and in flavoring candy and other confections. The vanilla plant is propagated by cuttings, produces a crop every three years and continues bearing for thirty or forty years. Vanilla is produced artificially by several methods; and as the beans are very expensive, the artificial product is very common.

VAN RENSSELAER, *vahn ren' se lahr,* STEPHEN (1764–1839), an American politician, the eighth "patroon" of the vast estate near Albany, now forming three entire counties, which was first acquired by Killian Van Rensselaer (1595–1644). He was born in New York and educated at Harvard. In 1783 he married a daughter of General Philip Schuyler. He was a leader of the Federalists in his state and served in the state senate and assembly, and in Congress from 1823 to 1829. He was a moving spirit in the construction of the Erie and Champlain canals and was president of their boards from 1811 till their completion, in 1825. In 1824 he founded at Troy the Rensselaer Polytechnic Institute.

VA'POR, in physics, the gaseous state into which solids and liquids pass when heated. In their structure and physical properties, there is practically no difference between vapors and gases (see GAS), but in ordinary usage the term *vapor* is applied to those gases that are formed by the action of heat on liquids and solids, while the term *gas* is applied to those substances which remain in gaseous form under ordinary conditions of temperature and pressure. We speak of steam as a vapor and of oxygen as a gas. Water vapor formed by the action of the heat of the sun on the surface of the land is always present in the atmosphere and has an important effect on climate. See RAIN.

VARICOSE, *var e kose',* **VEINS,** dilated veins, which are marked by knotty swellings at the valves. The disease commonly affects the lower limbs and sometimes becomes very painful and even dangerous, from the bursting of the veins, though it often is merely an inconvenience. Rest and support in an elevated position and the application of proper bandages are elements in the treatment.

VARI'ETY, in plant and animal classification, a subdivision of a species, including an individual or group of individuals differing in some nonessential way from the rest of the species. Varieties are believed to result from differences in climate, nourishment, cultivation and the like, and to be less permanent than species.

In naming plants and animals, the name of the variety is placed third, following the name of the species; as *Ranunculus multifidus,* variety, *terrestris.* Here, *Ranunculus multifidus* is the common, yellow, water crowfoot, and the variety *terrestris* is a form growing on the ground.

VA'RIOLOID, a mild form of smallpox, induced by inoculation. See SMALLPOX.

VAR'NISH, a transparent liquid made by dissolving gums in alcohol, turpentine or oil. It is used to form a transparent coat over surfaces to protect them from air and moisture or to make them more beautiful. The resinous substances most commonly employed for varnishes are mastic, lac, copal, amber and asphalt; and the solvents are fixed oil, volatile oil and alcohol. Varnishes are colored with arnotto, gamboge, saffron, dragon's blood and other substances.

The base of varnish is gum copal, or the fossil gum found in Zanzibar, Sierra Leone, New Zealand and the Philippine Islands. The best gum is found in Zanzibar. When the gum is received in the varnish factory, it is broken up into pieces about the size of small egg coal. As it is being broken up, it is selected, for in one chunk of the amberlike material there may be both transparent and almost opaque streaks; the white transparent gum goes into the making of the best grades of varnish, and the dark-colored gum goes into the poorer grades. After the gum copal is broken, it is run through a series of hand sieves, which divide it into block, nut, chip and dust, for convenience in handling. The gum is then ready for the kettle.

For first-class varnish, only Calcutta linseed oil is used. This oil is made from the flaxseed of India. The turpentine used for thinning the varnish is of the best and purest grade. The copper kettles in which the melting and mixing are done are on truck wheels, so that they can be rolled over a fire or taken off easily. The melting gum is constantly stirred. When the oil has been mixed with the liquid gum, the kettle is run back over the fire once more, and the gum and oil are boiled again. Then it is set away to cool, after which a quantity of turpentine is mixed with the gum and oil

and the varnish is made. The varnish is strained through cotton before it is pumped into the storage tanks, where it is left to age for at least six months and often for two years.

Shellac varnish is made in churns, or barrels, revolving on journals. The shellac as it comes from India looks like amber-colored mica, for it is in thin sheets and is almost transparent. This shellac is mixed with the proper amount of alcohol, to dissolve it and form the varnish.

VAS'CO DA GAM'A. See GAMA, VASCO DA.

VASE, a vessel of an ornamental character, generally of pottery but frequently of stone, glass, metal or other materials. Those which have come down to us from ancient times in greatest numbers are the so-called Etruscan vases, made of terra cotta and adorned with painted figures (see ETRURIA, subhead *Etruscan Vases*). The Greek vases of the oldest style come chiefly from Corinth and the islands of Thera and Melos. Those of the late rich style have been almost exclusively discovered in Lower Italy, Apulia and Lucania. They were probably manufactured there, chiefly in the fourth and third centuries B. C.

Italy, France and Germany in the sixteenth and seventeenth centuries produced many vases which are the perfection of artistic form and execution and since the fifteenth century the Venetian vases have been masterpieces of art. From India, China and Japan also have been obtained vases of various materials, especially of porcelain, vying in elegance of form and beauty of ornamentation with those produced in Europe. Of late, some vases have been produced in the potteries of the United States which compare favorably with those made in other lands.

VASELINE, *vas'e lin,* or *vas'e leen,* a product composed of a mixture of paraffines, obtained from petroleum after the hydrocarbons are driven off. It is used as a base for ointments, pomades and cold cream, and is employed for coating surgical instruments and steel surfaces, generally to protect them from rust. See PETROLEUM.

VAS'SAR COLLEGE, one of the leading American colleges for women, founded near Poughkeepsie, N. Y., in 1861, and named in honor of Matthew Vassar, whose generosity made its establishment possible. He gave 200 acres of land and $788,000 for the enterprise. The college buildings, which are located on a picturesque elevation overlooking the Hudson River, include seven residence halls, Thompson Memorial Library, a museum and an observatory. There is also a farm of 675 acres, on which is maintained a model dairy. Conservatories, flower gardens, an open air theater and athletic grounds are other interesting features. Vassar maintains high standards of scholarship and provides courses leading to the degrees of Bachelor of Arts and Master of Arts. There is a faculty of over 140, and a student enrollment of about 1,100. The library contains over 86,000 books and pamphlets.

Matthew Vassar (1792–1866), founder of the college, was born at Norfolk, England, but was brought to America when four years old. His boyhood was passed near Poughkeepsie, where his father built up a prosperous brewing business. Besides contributing funds to establish the college which bears his name, he gave generously to other causes.

VAT'ICAN, the most extensive palace of modern Rome, residence of the Pope, built upon the Vatican Hill, from which it receives its name. It is a long rectangular edifice, lying north and south, with an irregular cluster of buildings at each end. The present building was begun by Pope Eugenius III (1145–1153) and has been enlarged and embellished by many subsequent Popes. It now possesses twenty courts, and, it is said, 1,100 rooms. Immense treasures are stored in it, including celebrated collections of pictures of many of the great masters, and museums in which all periods of the arts are represented by many of their most perfect productions. Among its noblest art treasures are the frescoes on the ceiling of the Sistine Chapel, painted by Michelangelo, representing scenes and figures connected with sacred history; the frescoes painted by Raphael on the ceilings and walls of certain apartments, known as Raphael's *stanze,* the subjects being biblical and allegorical.

Since the return of the Pope from Avignon in the fourteenth century, the Vatican has been the residence of the pontiffs, and here the conclaves meet for the election of new Popes. Since the unification of Italy and the consequent loss to the Papacy of all political power, the Pope has never gone beyond the Vatican gardens.

The Vatican Library was first constituted by Nicholas V (1447–1455) and was added to and enlarged by Leo X, Pius IV, Pius V and other Popes. The manuscript collections, which are said to contain about 25,600 manuscripts, are priceless. The number of printed volumes has been estimated at from 150,000 to 220,000, including 2,500 fifteenth century editions and a great number of bibliographical rarities.

VATICAN COUNCIL, the Ecumenical Council of the Church of Rome, which met in the Vatican under Pope Pius IX, Dec. 8, 1869, and adjourned July 18, 1870. No council had ever been attended by so large a number of ecclesiastics. It declared the personal infallibility of the Pope, when speaking *ex cathedra,* to be a doctrine of the Church, a declaration yet maintained.

VAUDEVILLE, *vode'vil,* in the French sense, a kind of farcical comedy in which dialogue is interspersed with dancing, comic acting and songs of the day, a name originally given to a popular humorous drinking song, first composed in the valley of *Vau-de-Vire.* In the United States, vaudeville is merely a series of singing, acting and dancing numbers, pretending to no unity and having no relation to the drama.

VAULT, in architecture, a continued arch, or an arched roof, so constructed that the stones, bricks or other materials of which it is composed, sustain and keep one another in place. Vaults may be cylindrical, elliptical, single, double, cross, diagonal or Gothic.

VEDAS, *va'das,* from a Sanskrit word meaning *know,* the oldest sacred writings of India, written in Sanskrit and supposed to have been produced by a series of authors between 1500 and 1000 B. C. The Vedas are four in number, called respectively, the *Rig-Veda, Yajur-Veda, Sama-Veda* and *Atharva-Veda.* Of these the *Rig-Veda* is the oldest and most important. Its name means *stanzas of praise,* and it consists of more than a thousand hymns, most of them celebrating the deeds and begging the blessing of the greater gods. The other three seem to have been drawn largely from the first one. The latest of the four is sometimes questioned as to authenticity, being concerned rather with superstition than with religion. It reflects the development of the Brahmanical system with its departure from the earlier monotheistic system and its polytheistic rites.

All the Vedas are believed by the Brahmans to be inspired, and are held by them in the highest respect.

VEGA CARPIO, *va'ga kahr'pe o,* FELIX LOPE DE (1562–1635), a dramatic poet of Spain, best known as Lope de Vega, the most prolific imaginative writer in the annals of literature. Born in Madrid, in 1562, he joined the army, and in 1588 accompanied the Invincible Armada on its ill-fated expedition against England. After being twice married and twice a widower, he became a priest and subsequently entered the order of Saint Francis. He had already published various poems, but his dramatic and poetical productions now multiplied with extraordinary rapidity. For many years there was scarcely a week when he did not produce a play, and he himself declared that he often wrote, rehearsed and produced a play in twenty-four hours. He enjoyed an immense popularity and received marks of distinction from the king of Spain and from Pope Urban VIII. About three hundred of his dramatic works have been printed. They reveal an inexhaustible, though ill-regulated, imagination, a strong mixture of the sublime and the ridiculous and extraordinary facility in versification.

VEGETABLE IVORY. See IVORY PALM.

VEGETABLES, in the sense in which the term is generally used, those parts of plants, exclusive of fruits, which are used for food. In some, as the turnip, the roots are the parts used; in others, as the onion, the bulbs. The tubers of the potato and artichoke; the stems of asparagus; the leaves of the lettuce and cabbage; the flower buds of the cauliflower; the green fruit of the cucumber; the ripe fruit of the tomato; the seeds of corn, peas and beans, are common vegetable foods.

The principal components of vegetables are water, protein, fat, nitrogen, starch and certain indigestible refuse, like fiber and ash. The proportions of these constituents vary among different vegetables, but in all, the principal element is water. The amount of water varies from 58.9 per cent, in green beans, to 95.4 per cent, in the cucumber. The per cent of protein varies from .4 per cent, in the watermelon, to 9.4 per cent, in green beans. The amount of fat varies from .1 per cent, in the pumpkin, the radish, the potato, celery and the beet, to 1.1 per cent in

green corn. The amount of nitrogen varies from 2.2, in lettuce, to 26.1, in the sweet potato.

Of fresh vegetables, green shelled beans have the highest fuel value, and the cucumber has the lowest, the value of the latter being about one-ninth that of the former. Others which contain a high fuel value are sweet potatoes, green peas, green corn, sugar peas and parsnips. In the cooking of vegetables, besides the loss of water content, there are chemical changes which often detract materially from the food value. Vegetables form an important part of the diet, because, in addition to their nutritive value, they contain organic acids and other elements essential to the health of the system.

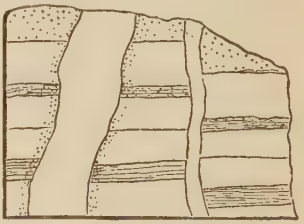
Related Articles. For descriptions of the vegetables in common use consult the following titles:

Artichoke	Corn	Pea
Asparagus	Cress	Potato
Bean	Cucumber	Pumpkin
Beet	Eggplant	Radish
Brussels Sprouts	Kohl-rabi	Rhubarb
Cabbage	Lentil	Spinach
Carrot	Lettuce	Squash
Cauliflower	Onion	Tomato
Celery	Oyster Plant	Turnip
Chard	Parsley	Sweet Potato
Chicory	Parsnip	Yam

VEGETA'RIANISM, the belief and practice of subsisting on a vegetable diet to the exclusion of animal food, a doctrine held in ancient times by such men as Pythagoras, Plato and Plutarch and later by Rousseau, Shelley and Swedenborg. At present vegetarian societies exist in considerable numbers in the United States, Canada and several European countries. A vegetable diet, it is claimed, is more healthful, economical and ethically effective than a diet mixed with animal food. Vegetarians differ among themselves, however, as to the degree to which they exclude animal products, some excluding only flesh, others fish and fowl, and others milk, eggs and cheese, as well. While scientific investigations on the whole show the superior efficacy of a mixed diet on the human mechanism, the vegetarians have without doubt done society a service in calling attention to the prevailing custom of eating too much meat.

VEII, *ve'yi,* an ancient Etruscan town, in early times the most formidable rival of Rome. The Romans and the Veientines were constantly at war, and because the latter were uniformly unsuccessful in pitched battle, they adopted the plan of shutting themselves up in the city when the Romans approached and of going out to plunder when they were safe from attack. The family of Fabius, to whom had been entrusted the defense of Roman territory against the Veientines, were decoyed into ambush and put to death in this manner. About 396 B. C. Camillus took the city, after which it declined to an insignificant village.

VEIN, *vane,* in geology, a formation of igneous rock, occupying a fissure in other rock, as represented by the nearly perpendicular layers in the figure. They often extend into the earth hundreds of feet. Veins are usually formed by rock in molten condition, forced into the crevice by pressure, but may also be the result of mineral deposits left by underground waters. They often contain ore deposits, as gold, silver and other metals. Miners call a metal-bearing vein a *lode.* Small veins are often seen in boulders and pebbles, where they can be easily studied. See DIKE; GEOLOGY.



VEINS

VEINS, a system of canals, or tubes, distributed throughout the bodies of animals, for the purpose of returning the impure blood to the heart and lungs, after it has been carried to the various parts by the arteries. Veins originate in the capillaries as tiny tubes, and as they unite they decrease in number and increase in size, till all those from the head, neck and upper extremities form the *superior vena cava* and those from the other parts of the body form the *inferior vena cava.* Both these large veins empty into the right auricle of the heart. The position of the veins in the circulatory system is shown in the color plate accompanying the article CIRCULATION.

The walls of the veins, like those of the arteries, are composed of three coats, but they are less elastic and have no pulsation. They collapse readily when empty. The distinguishing parts of a vein are the valves, which are made of folds in the internal coat and are arranged in pairs. They lie against the walls when the blood is flowing onward, but if from any cause the flow is obstructed, the valves are forced upward till they meet in the middle of the vein, and so prevent the

blood from flowing backward. The action of the valves may be shown by pressing on some vein near the surface, thus preventing the flow of the blood toward the heart, when the valves will make little elevations in the vein. Valves are not found in the very smallest veins, nor in those of the abdomen, lungs and brain.

The blood flowing from a wounded vein is dark in color and comes out in an even stream. To check the flow, press on the vein below the wound or between it and the extremity.

Related Articles. Consult the following titles for additional information:
Arteries Circulation
Capillaries Wound

VELAZQUEZ, or **VELASQUEZ**, *va lahs' kaith*, DON DIEGO RODRIGUEZ DE SILVAY (1599–1660), the greatest master of Spanish painting. He was born at Seville, of Portuguese parents, and studied first under Francisco Herrara the elder, and afterward under Francisco Pacheco. In 1622 he went to Madrid, and as the result of this visit received an appointment as principal painter to Philip IV. Through the advice and intercession of Rubens, Velazquez went later to Italy, where he closely studied the works of Michelangelo, Raphael and Titian and the contemporary painters, especially Guido Reni, whose influence is evident to a marked degree in his works. On his return to Spain, in 1631, Velazquez was received with great distinction, and in 1658 the king raised him to the dignity of a noble.

VELAZQUEZ

Valazquez' chief characteristic in painting is naturalism. He was never imaginative, but painted exactly what he saw, combining this power of realism with a mastery of light, shade, coloring and composition. Among his finest works are the *Aguador,* or *Water Carrier;* a *Nativity,* or *Adoration of the Shepherds;* the *Brothers of Joseph; Moses Taken from the Nile;* portraits of Philip IV and of Elizabeth, his queen, Pope Innocent X and other dignitaries, and many pictures both from history and from common life.

VELOCIPEDE, *ve los'e peed,* a light vehicle or carriage propelled by the feet of its rider. One of the older forms of this carriage was constructed of two wheels of nearly equal size, placed one before the other and connected by a beam, on which the driver's seat was fixed. The rider, sitting astride the machine, propelled it by the thrust of each foot on the ground. This form dates from the early part of the nineteenth century. It was about half a century later that treadles, operating cranks on the axle of the front wheel, came into use. See BICYCLE.

VELOCITY, *ve los'e ty,* the rate at which a body changes its position in space. Velocity is popularly expressed as so many miles per hour or as so many feet per second. The velocity of a body is *uniform,* when it passes through equal spaces in equal times; it is *variable,* when the spaces passed through in equal times are unequal; it is *accelerated,* when during each portion of time it passes through a greater space than during the preceding equal portion; it is *retarded,* when a less space is passed through in each successive portion of time. Linear velocity is speed forward in a straight line; angular velocity is speed about an axis.

VEL'VET, the most familiar of the fabrics woven with a pile, produced by adding to the usual threads of the warp and weft an additional row of warp yarns, woven into the ground of the cloth and passed over wires on the surface. In the case of a loop pile, the wires are drawn out, without cutting, but for velvet or other cut pile, a knife is passed along a groove on the top of each wire before the wire is withdrawn. Real velvet is made entirely of silk. Cotton and woolen goods, woven in this manner, are called *velveteen* and *plush,* respectively.

Some of the richest and most artistic of the textiles woven on Italian looms in the fifteenth and sixteenth centuries were made, in part at least, of velvet. Similar stuffs were also made in Spain and Flanders. Many of these were for ecclesiastical vestments and altar cloths, and for hangings. The effect of a raised pattern in velvet, on a plain or figured silk ground, is very beautiful. Sometimes a design is formed of a long, upon a short, pile, called *velvet upon velvet,* and this, too, has a fine effect. Velvet is believed to have been made first in China.

VELVET LEAF. See INDIAN MALLOW.

VENATION, *ve na'shun,* the arrangement of veins in leaves, related to the shape of the leaf and its mode of germination, an im-

portant characteristic in the classification of plants. Most leaves are netted-veined, parallel-veined or fork-veined. The netted-veined are the most numerous, and are divided into several groups. True netted leaves have a single midrib from which branch primary veins terminating in delicate veinlets that curve upward just within the margin of the leaf. If the primary veins extend directly to the edge of the leaf they are said to be feather-veined. For illustrations of venation, see the article LEAVES.

VENDET'TA, an Italian word, taken from the Latin *vindicta,* meaning *revenge,* is a blood feud in which the next of kin assumes responsibility for avenging a murdered person, probably a survival of methods of enforcing justice practiced before the organization of the state and of public courts. In Corsica the vendetta is held to be one of the most binding of family obligations, and the custom is held to a greater or less degree among the Albanians, Druses, Bedouins and other isolated and primitive peoples. The *feuds* among the mountaineers of Eastern Kentucky and Tennessee and Western Virginia in America are analogous to the vendetta.

VENDOME, *vahN'dohm',* **COLUMN**, 142 feet high, stands in Paris, in the Place de la Vendome. It was built in 1811 by Napoleon's order, was later thrown down by the communists, but the preserved pieces were reerected on the same spot in 1875. The masonry column is set with 900 feet of bronze, made from 1,200 melted captured cannon, depicting memorable scenes in the Napoleonic campaigns from 1806 to 1810. The Place Vendome was named for the Duke of Vendome, who as a member of a noble house of the old French kingdom served his country in many wars.

VENEER', a thin layer of hard wood, as mahogany, rosewood or maple, glued to the surface of wood of a commoner sort, to give the whole the appearance of being of the more valuable material. It is used for furniture and some interior finishings. Owing to recent improvements in sawing machinery, layers can be obtained that are almost as thin as paper. A good piece of veneer, contrary to popular belief, may be more serviceable than solid wood, for the reason that it is less likely to warp and crack.

VENETIAN, *ve ne'shan,* **SCHOOL OF PAINTING.** See PAINTING.

Statue of Simon Bolivar

VENEZUELA, *ven e zwe' la,* a republic of South America, officially known as the UNITED STATES OF VENEZUELA, lying north of Brazil and north and east of Colombia. The coast line, which borders on the Caribbean Sea, has a number of important indentations, the largest being the Gulf of Venezuela and the Gulf of Paria. The country contains twenty-two states, two territories and a Federal district in which the capital is located. Its greatest extent from northeast to southwest is about 925 miles, and from north to south, 725 miles. Having an area of 393,976 square miles, it is the seventh country of South America in area, and is but little smaller than California, Montana and Oregon combined.

The People. By far the largest proportion of the inhabitants are Indians. Among the *mestizos,* or natives, there are many of negro blood. The whites are of Spanish descent; they represent the culture and customs of Spain, and constitute the ruling class. The country is unevenly populated, most of the people living in the agricultural and mountainous regions of the northwest. The interior is largely unexplored and uninhabited. Spanish is the prevailing language. In 1916 the population was estimated at 2,827,762. The Roman Catholic is the leading Church, but all faiths are tolerated.

Education is free and compulsory, but the elementary schools are poor, and the attendance laws are not enforced. In 1918 there were only 50,000 pupils in the elementary schools. There were fifty-eight secondary schools for boys, thirty-eight for girls and six for both sexes. At Caracas, the capital, there is a normal school for men and one for women. There were also thirty-four schools for higher instruction and twenty-one academies. There are universities at Caracas and Merida. There are also miltary, commercial and other schools in the various cities. But notwithstanding all these institutions and efforts to educate the youth, it is estimated that at least three-fourths of the inhabitants are unable to read and write.

Surface and Drainage. Venezuela is naturally divided into three surface regions. These are the highland region in the northwest, the Guiana highlands in the southeast and the Orinoco valley between. The highland region, in the northwest, is formed by two ranges of the Andes Mountains, one of which extends directly north and south and forms the boundary between Venezuela and Colombia. This range contains some summits with an altitude of 10,000 feet. The other range enters the country near the headwaters of the Orinoco and extends northeasterly to the Gulf of Triest. This range contains the highest land in the country; some of the peaks have an altitude of over 15,000 feet and are capped with perpetual snow. Between these ranges of the Andes is the low depression occupied by Lake Maracaibo, which is directly connected with the sea. The boundary between Venezuela and Brazil is formed by the Parima and Pacarima mountains, which rise to altitudes varying from 6,000 to 11,000 feet. From these ranges the land gradually descends to the basin of the Orinoco. This great interior is divided into the lowlands, along the lower part of the river's course, and the llanos, which lie chiefly north of the river and between it and the Andes. A portion of this region is yet unexplored, but it is supposed to consist of rolling plains and hills, heavily covered with forests.

Venezuela is supposed to have over 1,000 rivers and is perhaps more completely watered than any other country of South America. Chief among these rivers is the Orinoco, flowing through the middle of the country, and its chief tributaries, the Apure, the Meta and the Rio Negro, the last of which is connected with the Amazon by the Cassiquiare. The Orinoco and its chief tributaries, all of which are navigable, furnish an outlet not only for the interior of Venezuela, but for a portion of Columbia as well. There are a number of less important streams flowing into the Caribbean Sea. Of the lakes, Maracaibo, in the northwestern part, is the largest and most important.

Climate. The climate of Venezuela depends upon altitude more than upon latitude. The varying elevations of the country divide it into three climatic regions. The first is the lowland region, which extends from sea level to an altitude of 2,300 feet. This has a hot, tropical climate, with a mean annual temperature of about 77°. The second is the region of the interior, ranging in altitude from 2,300 to 6,500 feet. This region has a salubrious, temperate climate, with a mean temperature of about 65° and with a comparatively narrow range of temperature, the thermometer seldom rising above 80° or falling below 60°. In the highlands of the mountains is a cold region, which ranges in mean temperature from near freezing point to that of perpetual snow. There are two seasons, the rainy and the dry. During the rainy season the lowlands and most of the interior receive copious rain, in some sections sufficient to flood the country. Along the coast and the lower courses of the rivers the climate is somewhat unhealthful, but the temperate regions of the interior are pleasant and healthful, even to those who are accustomed to temperate latitudes.

Mineral Resources. The country contains large deposits of minerals. Gold is found in the Yuruari territory and is mined to a considerable extent, the annual output in 1918 being 81,327 ounces. Silver mines occur in the central, southern and southwestern parts of the country, while copper and iron are widely distributed. Some tin is also found. Other minerals of importance are sulphur, coal and kaolin. There are a number of salt mines in the country, and they are worked by the government. Petroleum is found in the southwestern part of the country, in the State of Los Andes. There are valuable deposits of asphalt on the island of Trinidad, in the vicinity of Maracaibo and in the State of Bermudez. This is the richest asphalt region in the world. Granite, marble and other building stones are widely distributed over the country. Lack of capital and transportation facilities has thus far prevented the exploitation of the mineral industries of the country.

Agriculture. Agriculture is the chief occupation of the inhabitants. However, only about one-ninth of the surface is under cultivation. The chief crops are coffee, cacao, sugar cane, cereals, fruits, beans, potatoes and other vegetables. Tobacco is successfully cultivated in the lowlands, and the forests furnish valuable products for export, chief among which are copaiba, vanilla and rubber. In general, agriculture is in a backward state. Primitive implements and methods are used. and but poor returns are received for the capital and labor invested. The large areas

of pasture land particularly adapt the country to cattle raising, and this is one of the most important branches of agricultural industry. The country also has large numbers of horses, goats and sheep.

Manufactures. The manufactures are comparatively unimportant and are confined to the larger cities. The chief industries are the manufacture of cotton goods, shoes, hats, carriages, furniture and agricultural implements. The country also has a number of breweries and distilleries. Refrigerating plants for supplying meat for shipment have been established at Puerto Cabello and Baranco, and a cocoanut butter and oil factory has been opened at Cumana. The most important manufacturing industries are exploited by foreign capital and are under foreign management.

Transportation. The interior is reached by the Orinoco and its numerous navigable tributaries. Roads are few and poor, except in the vicinity of large cities, but they are being rapidly improved. Caracas is joined with its seaport, La Guira, by railway. A few other interior towns are also connected with seaports in this way. In all, the country has over 530 miles of railway in operation. Through a French cable it has communication with the rest of the world, and the important cities and towns have telegraph and telephone service.

The leading seaports are connected by steamer with the ports of Europe and the United States. The commerce of the country is not as great as its resources and population would warrant. The chief article of export is coffee. Other important exports include cacao, hides, deer and goat skins, rubber, tobacco, fustic and some other forest products. Some cattle are shipped to Cuba. Most of the coffee and hides go to the United States. The imports consist of foodstuffs, manufactured goods and machinery.

Government. The government is republican in form. The present constitution was adopted in 1914. The head of the executive department is the President, who is elected for seven years and is assisted by a Cabinet of Ministers, through whom he acts. The members of the council are appointed by Congress every two years, and the President is chosen by the Congress. The legislative power is vested in a Congress of two houses, a Senate and a Chamber of Deputies. The members of the Senate are apportioned two to each state and district, and are elected for three years. The Deputies are apportioned according to population, one to every 35,000 and one every 15,000 additional inhabitants, and are elected by universal suffrage. No state is deprived of a Deputy if its population is less than 35,000. Each province or state has its own legislature and executive, while the unorganized territories and colonies are governed by an executive appointed by the national government.

History. The coast of Venezuela was first seen by Columbus in 1498. The following year it was more carefully examined by Vespucius, who gave the region the name it now bears, which means *Little Venice;* it was applied because of the discovery of an Indian village built on palisades over the waters of Lake Maracaibo. The first Spanish settlement was made in 1527, and for more than two centuries the country was a Spanish colony, during which time it suffered from change of rulers and internal dissensions. The early Spaniards treated the natives in a most cruel manner and enslaved many of them. The struggle for independence began early in the nineteenth century and was completed by the efforts of the patriots under Bolivar in 1821, when Venezuela and New Granada united under one government and formed the country of Colombia. In 1829 Venezuela seceded and became an independent republic. The country has always suffered from frequent revolutions and rebellions. It has also had several disputes with European powers concerning boundary lines. The last of these assumed such importance that in 1894 the United States recognized the seriousness of the contention between Venezuela and Great Britain and suggested to the latter country that the dispute be settled by arbitration. This was finally agreed to, and the question was submitted to a special tribunal, which in 1899 made final settlement of the boundary line between Venezuela and British Guiana.

In 1897 a serious political disturbance began, which led, two years later, to a rebellion. This became so widespread that it threatened the existence of the established government, but in October, 1902, the revolutionists suffered a serious defeat, and their army was dispersed. In 1902 the country had a serious dispute with France, Germany and Great Britain over the payment of claims

VENICE: THE CAMPANILE AND DOGE'S PALACE

due subjects of these several nations, and in December Great Britain and Germany combined in a naval demonstration and blockaded some of the Venezuelan ports. Through the intercession of the United States, however, all parties agreed to submit the dispute to the court of arbitration at The Hague, and the points in dispute were satisfactorily adjusted.

Related Articles. Consult the following titles for additional information:

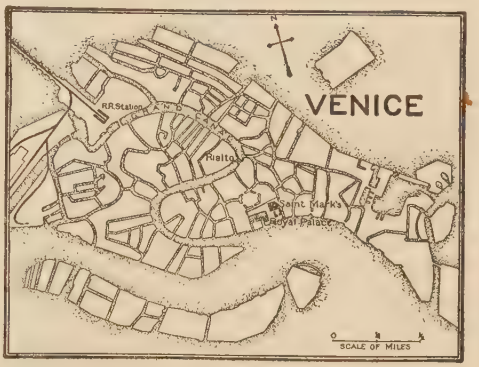
Bolivar, Simon — Maracaibo
Caracas — Trinidad

VENICE, *ven' is,* ITALY, a city famed throughout the world for its unique character and splendid art treasures. Venice, built on a cluster of islands, has canals for its principal streets, and more bridges than any other city in the world. Gondolas and other boats take the place of cabs, street cars and automobiles. The city lies in a sheltered lagoon on the northwestern shore of the Adriatic Sea, 164 miles by rail east of Milan. The islands on which it is built number 120, and are divided into two main groups, between which flows the celebrated Grand Canal. This canal, which is the principal thoroughfare, passes through the city in the form of a letter *S* and divides it into two nearly equal parts. The canal is crossed by four bridges, the chief of which is the Rialto. There are 146 smaller canals, by means of which all parts of the city can be reached by boat.

The description which follows applies to Venice as it exists in normal years. During the World War it was repeatedly attacked by airplanes, and was on one occasion threatened with capture. Its most valuable art treasures were removed to Rome and other interior centers, but these were returned at the close of the war.

The Piazza, or Square of Saint Mark's, is the center of interest. This is the great center of business and amusement. It is 576 feet long, 269 feet wide on one side and 185 feet wide on the other. The east side is faced by the Cathedral of Saint Mark's, one of the most renowned structures of its kind in the world. On the north and south sides of the square are the palaces formerly occupied by the procurators of the cathedral, and they now form a part of the royal palace. These buildings contain many rare paintings by some of the most celebrated artists of Venice, including Tintoretto and Paul Veronese. The famous Campanile, which fell in 1902, and was rebuilt, also faces the square. Another object of interest facing the square is the clock tower, built in 1496 and surmounted by two bronze figures, which strike the hours on a large bell.

Among the churches of special interest is that of Santa Maria della Salute, which contains excellent paintings of Titian, including



his masterpiece, *The Assumption of the Virgin,* and *The Presentation in the Temple.* The Church of San Sebastiano is celebrated for its altarpieces by Paul Veronese, and the Friari, a church built for the friars, is interesting for its size and because it is a good representation of the Italian Gothic style of architecture. It contains many monuments and pictures. The palaces are of no less interest than the churches. Of these the palace of the Doges, originally built in 800, but several times destroyed and rebuilt, is the most important. During the time of Venice's greatest prosperity, this was the residence of its rulers. It now contains many treasures of art. From the rear of this palace the celebrated "Bridge of Sighs" leads to the prison, which is still in use. Many of the palaces are now used for other purposes, serving as hotels, museums and office buildings. The Academy of Fine Arts is also of great interest, because it contains one of the most valuable collections of paintings found in Europe. The Rialto is the principal commercial street and typically represents the life of the city. The bridge of this name crosses the Grand Canal at the point where the first settlement was made.

Modern Venice is of considerable commercial importance. The manufactures include lace, tapestries, mosaics, bronzes, jewelry and wood-carvings among its finer wares, and cotton and woolen goods, chemicals, heavy machinery and clocks among its larger industries. There is also some shipbuilding, and glassware is manufactured.

The islands occupied by the city were formerly a refuge from the hordes of barbarians which invaded Italy from the north. It is supposed that the first settlement was made about the middle of the fifth century, but there is no authentic record of the fact. In the sixth century Venice was independent, though it was tributary to the Eastern Empire. It was obliged to defend itself from pirates and from the Lombards of Italy, and because of this an organized government was formed and the leader or ruler, entitled *doge,* was selected. The Crusades gave the city a great impetus, because it became a commercial center for these military movements.

During the Middle Ages Venice had increased in commercial importance and power until considerable surrounding territory of the mainland was under its control, and just previous to the discovery of America it was the leading commercial city of Europe. From that time its influence began to wane. The Turks captured Constantinople and cut off much of the trade from the East. A route to India around the Cape of Good Hope also brought much of that trade to Portugal, and the commerce which had entered Europe through Venetian harbors now came through Genoa and other cities to the west. In 1797 the Venetian Republic was deprived of its independence by Napoleon, and most of the possessions were given to Austria. Within a few years the Austrians ceded Venice to Italy. Between this time and 1866, the city was alternately under the rule of Austria and Italy, until finally by vote of the inhabitants it was joined to Italy.

The proximity of Venice to the war zone during the World War, especially after the Austro-German drive of 1917, caused great anxiety as to its fate, but it was never captured. However, the uncertain conditions caused thousands of its inhabitants to flee, and until the close of the war it retained only the memories of its former glory and activity. Time and peace will restore its prosperity and make it again the mecca of art lovers and tourists. Before the World War it had an estimated population of 163,000.

Related Articles. Consult the following titles for additional information:

Adriatic Sea
Bridge of Sighs
Campanile
Doge
Saint Mark's, Cathedral of

VENIZELOS, *ven e za' lohs,* ELEUTHERIOS (1864–), an eminent Greek lawyer and statesman, through whose influence Greece was brought into the World War on the side of the entente allies, was born of humble parentage on the island of Crete. He was educated in Canea, Crete and the University of Athens. After completing his education Venizelos returned to Crete, and at the age of twenty-three was elected to the assembly, where he soon became the leader of the liberal party. In 1910 he removed to Athens to become the leader of a party founded by the Military League, which was working for constitutional reform. Within a year he was chosen Prime Minister, and his influence became so strong that several factions united to oppose his policies.

In 1913 King Constantine, whose wife was a sister of Emperor William II, ascended the throne of Greece. At the outbreak of the World War, Venizelos led the movement to unite Greece with the entente allies, but Constantine advocated strict neutrality. Venizelos resigned in March, 1915, since he and the king could not work together. He was, however, persuaded to form a new Ministry; when Bulgaria entered the war against Serbia, he insisted that the Greek forces be mobilized, and accomplished his purpose in spite of the king's opposition. Since Greece was bound by treaty to go to the aid of Serbia if it were attacked by Bulgaria, Venizelos insisted that this agreement be fulfilled. Constantine refused his consent, and the Prime Minister again resigned.

In September, 1916, Venizelos and his followers set up a provisional government at Canea, but later transferred it to Saloniki. When Constantine was forced to abdicate in 1917, Venizelos was returned to power and Greece joined the forces against the Central Powers. He represented his country at the peace conference at Versailles in 1919. See GREECE; WORLD WAR.

VENTILATION, *ven ti la' shun.* See HEATING AND VENTILATION.

VENTRILOQUISM, *ven tril' o kwiz'm,* the art of speaking in such a way that the voice seems to come not from the speaker but from another source. Long practice is necessary to develop the art to perfection. The ventriloquist is able to "throw his voice," or produce the illusion of distance chiefly by proper control of his larynx. He draws a full breath, speaks without moving the muscles of his face, neck or chest, expelling the air through a narrow glottis. The ven-

triloquist's success depends largely on his skill in directing the imagination of his audience. The human ear is not quick to detect the direction from which a sound comes, and if a listener's attention is directed to a particular location his imagination is apt to associate it with the sound he hears.

VEN'UE, CHANGE OF, a change in the county or judicial district in which a case in law is brought to trial. It is made for the convenience of witnesses or on motion of the defense because prejudice on the part of the court or community precludes a fair trial in the jurisdiction where the action is brought. Change of venue is regulated by statute.

VE'NUS, the Roman name for the goddess of love. The Greeks called her APHRODITE. By some accounts she was the daughter of Jupiter, but according to the most popular legend she was born from the sea foam, near the island of Cythera. She was brought up by the nymphs in their ocean caves, and when she had attained the fulness of her size and beauty, she was conducted to Olympus, where she excited the greatest admiration. All of the gods wished to marry her, but she scorned them all, and as a punishment she was compelled by Jupiter to marry Vulcan, the ugliest of the gods. He gained no great happiness from the union, for Venus always despised him and bestowed her love on Mars and on the mortals Adonis and Anchises. Cupid was her son by Mars, and Aeneas was her son by Anchises. Venus was the special protectress of all young people who were in love, but she does not seem to have continued her interest in their affairs after they were once married. She was consequently chiefly worshiped by young people.

VENUS, one of the smallest but the most brilliant and conspicuous of the planets, second from the sun, its orbit lying between Mercury and the Earth. To the ancients, Venus was known as *Lucifer,* morning star, and *Hesperus,* evening star, according as it was seen after sunset or before sunrise. As evening star on clear moonless nights it may be observed to cast a shadow, its reflecting power being three times as great as that of the moon, due probably to a dense atmosphere and the presence of many clouds. The diameter of Venus is 7,700 miles, and it is 67,200,000 miles distant from the sun. Its sidereal revolution is performed in 225 days; its rotation period remains in doubt, because of difficulty of observation. It has various phases, according to the position it occupies, appearing as a thin crescent, gradually increasing to a full circle and then decreasing until it disappears.

Transit of Venus, the passage of the planet Venus across the disk of the sun, an occurrence of unsurpassed interest to astronomers and the entire scientific world. A full transit of Venus across the center of the sun's disk occupies about eight hours, the time being shortened when it occurs nearer the edge of the disk. Transits of Venus were observed in 1874 and 1882, and will occur again in 2004 and 2012.

VENUS DE MILO. See SCULPTURE.

VENUS'S FLOWER BASKET, a beautiful sponge, whose skeleton looks like spun glass, woven into an exquisite pattern, so delicate and white that one can scarcely believe it to be a natural skeleton. It is found in the deep sea near the Philippine Islands.

VENUS'S FLY'TRAP, or **DIONAEA,** *di o ne'a,* a plant of the sundew family, the leaves of which serve as traps for insects, upon which the plant feeds. It grows in the sandy soil of the North Carolina coast, and the insects it entraps are necessary to supply it with the nitrogen lacking in the earth. A flower stalk bearing a cluster of small white flowers rises from a rosette of leaves which spring directly from the ground. Each leaf is divided into two parts, the lower, flat and bladelike in appearance, and the upper, a roundish portion, consisting of two lobes, divided by a midrib. On the surfaces of the lobes are sensitive, hairlike processes, and along the edges are sharp bristles. When an insect alights on one of these sensitive hairs, the two lobes come together like a trap. A fluid is secreted by means of which the plant assimilates the juices of the animal. When the food is exhausted the leaf opens. After a leaf has captured several insects it loses its vitality and dies. See SUNDEW.

VENUS'S FLYTRAP

VERA CRUZ, *va'rah krooz*, MEXICO, the chief seaport of the republic, situated on an arm of the Gulf of Mexico, about 190 miles east of Mexico City. Though the site is low and sandy and the climate somewhat unhealthful, the construction of sanitation and port works has greatly improved conditions and has prevented the recurrence of periodic outbreaks of yellow fever. At the entrance of the fine harbor is the picturesque old fortress of San Juan de Ulloa, formerly used as a prison, but now only an interesting relic of colonial days. The city itself, with its encircling wall built of coral, is very attractive. Buildings of recent construction include a customhouse and a post and telegraph office, both constructed of cement, and the handsome building of the general lighthouse board, erected on land reclaimed from the sea. The dwelling houses of Vera Cruz are built of coral limestone in Spanish style.

The streets of the city are narrow, but are straight and well-kept, and are paved with asphalt over a wide area. Liberty Boulevard is the handsomest thoroughfare, and there are two public gardens. Prominent institutions include Vera Cruz Institute (a high school), the naval school, the only one of the kind in Mexico, the public library and a hospital. There are several factories, and fishing is an important occupation. Vera Cruz has a large, commodious harbor, with modern docks and other improvements, and enjoys a large general trade. Regular lines of steamers from the United States, the West Indies and Europe visit the port, and four railway lines meet here.

The city was founded by Cortez in 1520. During the Mexican War it was captured by Americans, and in 1914 it was temporarily occupied by United States marines as a result of Huerta's insult to the flag (see MEXICO, subhead *History*). To the Americans chief credit is due for making the city sanitary, for during their occupation they cleaned it thoroughly. Population, about 50,000.

VERB. The verb is that part of speech which expresses action or that tells what some object is or does, as, "The boy *runs*," "The man *lifts* the stone," "Fishes *swim*," "He *suffers* much," "The leaves *are* green." Verbs usually have the power of indicating time and mode, by means of tenses and moods, these varying in the different languages, as does also the conjugation, or system of verbal inflections and forms as a whole.

According to their relation to objects, verbs are classed as *transitive* and *intransitive*. A transitive does or may take an object, as "John *struck* Harry." An intransitive verb may not or cannot take an object, as "The tree *falls*." Some verbs are used both transitively and intransitively, as "The boy *studies*" and "The boy *studies his lesson*." According to their form in different tenses, verbs are *regular* or *irregular*. A regular verb forms its past tense and past participle by adding *d* or *ed* to the present tense form, as *live, lived*. Irregular verbs form their past tense and past participle otherwise, as *give, gave*.

Transitive verbs are in the *active* or *passive voice*, according to their representation of the subject as *acting* or as *being acted* upon, as "The sun *attracts* the earth," "The earth *is attracted* by the sun." *Auxiliary* verbs are those used with principal verbs to indicate mood and tense, as "The man *is* here," "The man *was here* yesterday," I *will* go tomorrow." *Inflection* of a verb is giving the changes in form to denote person, number and tense. *Conjugation* is the process of systematically carrying a verb through all its different moods, tenses, persons and numbers, in both active and passive voices, if it is a transitive verb.

VERBENA, *vur be' nah*, a genus of tropical and subtropical American plants of the vervain family, several species of which are cultivated for the beauty of their flowers. The cultivated varieties have creeping or spreading stems and bear their blossoms in dense, showy spikes, of almost every color except yellow. The wild varieties are often troublesome as weeds. The verbena of the perfumers is the lemon grass, from which the oil of verbena is extracted.

VERDI, *ver'de*, GIUSEPPE (1813–1901), the greatest composer of opera Italy has produced. He was born at Roncole, near Parma, the son of a poor storekeeper. He early showed a fondness for music, and at the age of eight began his studies with the village organist. Later he was taught for three years by the organist of a neighboring village. Verdi then went to Milan and placed himself under the conductor of the famous Scala Theater. In 1839 an opera of his was accepted by the Scala management, and the price paid for it—about four

hundred dollars—was more money than the composer had ever before possessed in all the combined years of his life. Verdi had married some years previously, and the struggle with poverty had been a hard one.

GIUSEPPE VERDI

With the acceptance of his first opera and commissions for new ones, the eve of a better day seemed at hand. Then suddenly his wife and both of his children died. After a long period of inactivity which followed this crushing loss, the composer returned to his labors with redoubled energy and produced in succession *The Corsair, Rigoletto, Il Trovatore* and *La Traviata;* and in a few years Verdi found himself a rich man. In 1870 the khedive of Egypt commissioned from him an opera for the opening of a Cairo Theater, and *Aïda* was written. This is considered his best work. Later operas were *Othello* and *Falstaff,* both founded on the Shakespearean dramas of the same names. No other composer of opera has so endeared himself to the masses as has Verdi. The haunting melodies of *Il Trovatore* and of others scarcely less famous are known throughout the world.

VERDIGRIS, *vur' de grees,* a greenish substance that forms on copper when exposed to acetic acid. It is used principally in the composition of paints and Paris Green, in the manufacture of dyes and as an ointment, or liniment. Taken internally, it is poisonous. White of egg and milk are antidotes.

VERDUN, *vair duN',* FRANCE, a ruined fortified town in the northern part of the country, a "rock of history around which the storms of battle have raged repeatedly." In 1792, during the French Revolution, and in 1870, after a bitter siege, it was occupied by the Germans, and for months during the World War it was the scene of the most desperate fighting. It was before Verdun, however, in the last great struggle, that the French vowed *"Ils ne passeront pas"* ("They shall not pass"), and it was here that the flower of the army of the Crown Prince of Germany spent itself in vain. Verdun lies in the valley of the Meuse River, 175 miles by rail from Paris, and forty-two miles from Metz, which is again a French city. Before the war Verdun was a town of 20,000 inhabitants, and a center for the manufacture of hardware, confections, leather goods and liquors.

Battle of Verdun. After the war of 1870–1871 Verdun was made a first-class fortress, having about it a thirty-mile ring of sixteen large forts and twenty smaller works. The great attack on the outer defenses was begun in February, 1916. General Pétain commanded the French forces. During seven months of the most sanguinary fighting, from February to September, the Germans gained 130 square miles of territory, but failed to capture the heart of the fortress; had they succeeded they would have made a breach in the allied defense of Paris. In October a counter-attack under General Nivelle was begun, which was followed by a second offensive in December. The French succeeded in reaching the second line of defenses by February, 1917, and, after a period of inactivity, began a third offensive in August. A succession of smashing blows drove the Germans back until all the dominating positions were in French hands. The Battle of Verdun is counted a great allied victory. The losses were exceedingly heavy on both sides; it is believed the Germans lost over half a million men.

VERESTCHAGIN, *vyeh reh shchah'gin,* VASILI (1842–1904), a Russian painter, noted especially for his pictures of war scenes. He was born at Novgorod, and was educated in Saint Petersburg (Petrograd) and in France and Germany. Among his productions are a series of paintings based on the expedition of 1867 against the Central Asian provinces, *The Departure of Napoleon from Moscow* and *Roosevelt at the Head of the Rough Riders.* Verestchagin depicted the cruel side of war with remarkable realism. He was killed in the Russo-Japanese War, while on a battleship which was sunk by the Japanese.

VERGIL, *vur' jil* (70–19 B. C.), the common designation of Publius Vergilius Maro, a great Roman poet, author of the *Aeneid.* He was born near Mantua, in northern Italy, and was the son of a small land-owner. His education, which was careful and thorough, was received at Cremona, Milan, Naples and Rome, where he became thoroughly acquainted with the Epicurean philosophy. A

naturally retiring disposition and a delicate constitution, together with the fact of his not being by birth a Roman citizen, would have checked any aspirations he might have had to the calling of the soldier, the orator or the statesman. He retired to his father's estate, with the intention of passing his life in the pursuit of poetry and agriculture, but was rudely disturbed by the allotment of his farm to the soldiers of Octavius, after the Battle of Philippi (42 B. C.). He recovered it through the aid of Asinius Pollio, the Roman governor; but further troubles arose, and he abandoned it, going at the instance of friends to Rome, where soon afterward he became acquainted with Maecenas and Octavius, to whom Pollio had recommended him. Through these powerful friends he received an estate in Campania and was enabled to devote his life to his favorite pursuits.

Vergil had become a great favorite of Octavius, and when, after the Battle of Actium (31 B. C.), the latter became Augustus, the poet was not forgotten. It was under the encouragement and patronage of the emperor that Vergil's greatest work, the *Aeneid,* was written; and indeed only the firm establishment of the Empire and the glorious achievements of Augustus in war and peace could have produced such an epic. During the years of its composition the poet recited selections before the imperial household. When the *Aeneid* was brought to a close, Vergil went to Athens, intending to spend a few years in revising the poem and completing certain unfinished parts. Soon afterward Augustus arrived in Athens from the East, and he induced Vergil to accompany him to Italy. Under the strain of seasickness and exposure to the strong sea air, his delicate constitution broke down, and he barely lived to reach Italy, dying at Brundusium, Sept. 21, 19 B. C. Rather than leave his life-work, the *Aeneid,* imperfect and incomplete, he ordered it burned, but finally yielded to the request of Augustus, that its revision might be entrusted to his friends Tucca and Varius, who edited it with the utmost care. The first of Vergil's poems of which the authorship is certain are the *Bucolics,* or *Eclogues.* While based on the model of the *Idyls* of Theocritus, these ten poems are by no means solely pastoral in character. Many contain allusions or are entirely devoted to current political events or to matters concerning the poet, the background and language alone being pastoral. The *Georgics* comprise four books of didactic poems on agricultural subjects. Book I deals with the tilling of the soil; Book II, with the cultivation of fruit trees; Book III tells of horses and cattle, and Book IV treats of bees. The *Georgics* are addressed to Maecenas and were said by some to have been written at his patron's request; the work is the most finished of all Vergil's poetry.

The *Aeneid,* the composition of which probably occupied most of the twelve years between the beginning of Augustus's reign and the poet's death, is Vergil's greatest work, although it is not as highly polished as some of his other poems. In general treatment of character and incident, it is inferior to its Greek models, the *Iliad* and the *Odyssey*; but certain parts are very successfully handled; and the whole poem is conceived in a spirit of delicacy, true culture and noble patriotism. In refinement of expression and elegant metrical construction, Vergil has not been surpassed. For an outline of the poem, see AENEID.

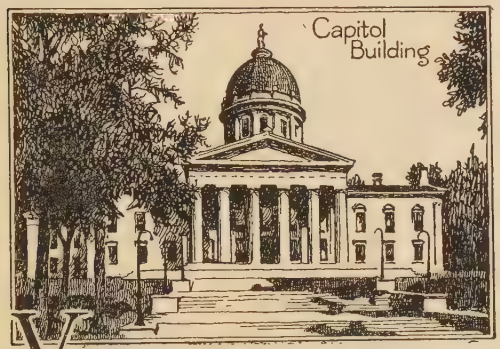
VERMES, *vur'meez,* or **WORMS,** that branch of the animal kingdom formerly including all invertebrate creatures (those without backbones) except the insects, but now restricted to such forms as earthworms, sea-worms and leeches. Most of the animals of this division have long, flat or cylindrical bodies, which are divided more or less distinctly into segments which have no limbs. Many of the Vermes are parasites, and some live in the intestines of human beings, where they cause great discomfort. See ZOÖLOGY.

VERMICELLI, *vur me chel'le* or *vur me sel'le.* See MACARONI.

VERMIFORM, APPEN'DIX, a long, slender, wormlike organ, which opens from the colon near its lower end. It is normally from three to six inches in length and is hollow to its tip. It is in the right side of the lower abdomen and projects upward and inward in most cases. Little is known of its function, which is probably unimportant. See APPENDICITIS.

VERMIL'ION, a bright red pigment, named from a French word meaning *little worm,* because formerly crimson, or carmine, was obtained from a small red worm. The vermilion of commerce is obtained by mixing together in a revolving drum, mercury, sulphur and a solution of potash in

water, and heating the mixture to about 115°, when it gradually assumes a red color. Vermilion is a permanent color and can be used with water or oil, but volatilizes at red heat and cannot be used for enamels. Cinnabar, a sulphide of mercury which occurs in large quantities in California, Brazil, Spain, China and other countries, is also a valuable source of vermilion.



VERMONT', the second largest of the New England states, popularly called the GREEN MOUNTAIN STATE, *green mountains* being an English translation of the French words *verts* and *monts*, from which *Vermont* is derived. The state is appropriately named, for its picturesque mountains with their wooded slopes are among the most charming phases of New England scenery. The flower emblem of the state is the red clover.

Location and Area. Vermont lies directly south of the Canadian province of Quebec, and its southern boundary follows the northern Massachusetts line. It is bounded on the east by New Hampshire, from which it is separated by the Connecticut River, and on the west by New York. It is therefore the only New England state having no coast line. The western boundary, however, follows the deepest channels of Lake Champlain for more than one hundred miles, and over half the lake belongs to Vermont. Along the northern boundary the state is ninety miles wide; along the southern, but forty. From north to south it is about 150 miles in extent, and its area is 9,564 square miles, 220 square miles in excess of the area of New Hampshire. Maine, the largest New England state, is over three times as large as Vermont, which ranks forty-second in size among the states of the Union.

People and Cities. In 1910, when the population was 355,956, Vermont was the forty-second state in number of inhabitants. Since the Thirteenth Census it has dropped behind Idaho and New Mexico in population, according to Federal estimates. The estimate bureau credited it with 366,192 inhabitants in July, 1918. The average density per square mile is thirty-nine; for the entire United States it is thirty-one.

Nearly one-third of the foreign-born inhabitants, who number about 50,000, are French-Canadians, and consequently the Roman Catholic Church claims the largest number of adherents of any one denomination. Among Protestant bodies, the Congregational, Methodist, Baptist and Episcopal are the most important.

Slightly more than half the population live under rural conditions. Burlington, with an estimated population of 21,802 in 1917, is the largest city. Rutland, Barre and Bennington are next in order. Montpelier (7,856 in 1910) is the capital.

Surface and Drainage. The entire state is mountainous, owing to the presence of the Green Mountain range, which extends from the Canadian border into Massachusetts, and to numerous parallel ranges, which extend in a nearly north and south direction. The Taconic range lies in the southwestern part of the state and is parallel to the main range. There are also several short ranges in the northern and eastern sections. The highest peaks of the main range from north to south are Jay, Sterling, Mansfield, Camel's Hump, Lincoln, Pico, Killington, Shrewsbury, Stratton and Haystack, of which Mount Mansfield, with an altitude of 4,364 feet, is the highest. There are twenty-one peaks having an altitude of 3,500 feet or more. All of the mountains of the parallel ranges are comparatively low, have rounded summits and are well timbered. These various ranges are separated by low, broad valleys, through which one or more streams flow and which have fairly fertile soil. The lowest point in the state is the valley of Lake Champlain. In general the surface is a combination of forest-clad hills and mountains, beautiful valleys and sparkling lakes and streams.

The eastern half of the state is drained by the Connecticut River and its tributaries, the most important of these being the Passumpsic, the Waits, the White, the Ottaqueechee, the Williams, the Saxtons and the West. The western part of the state is drained into Lake Champlain and thence

into the Saint Lawrence River. The most important streams flowing into the lake are the Missisquoi, the Lamoille, the Winooski and the Otter Creek, the last being the largest river wholly within the state. The southwestern section is drained into the Hudson River by the Battenkill and the Hoosic.

The most important lake is Lake Champlain, more than half of which belongs to Vermont. Other lakes in the Champlain Valley are Bomoseen, Saint Catherine and Dunmore. In the northeastern part of the state is Lake Memphremagog, a portion of which is in Vermont and the remainder in Canada. Southeast of this is Willoughby Lake, renowned for its peculiar surroundings. The lake is about six miles long and lies between two mountains which seem to have been rent asunder in some past geologic age. This region also contains numerous other smaller lakes, frequently known as ponds. All of these bodies of water have become favorite summer resorts.

Climate. The climate of Vermont is subject to extreme and sudden changes. In summer the temperature varies from 65° to 90° in winter it ranges from 18° to 45°. At Burlington the mean annual temperature is 45°. The climate is milder in the Champlain Valley than east of the Green Mountains. During the winter there is often much snow, which in the colder parts of the state covers the ground for three months. The average annual rainfall is thirty-three inches. The air is clear and pure.

Mineral Resources. The chief mineral wealth of the state is in its quarries. No other state in the Union produces so great a variety or quantity of marble and granite, and Vermont has practically become the center of the marble and granite industries. The value of the annual output of granite exceeds $3,000,000; the largest quarries are at Barre and Woodbury. The marble industry is chiefly in Rutland County. Roofing and other slate are obtained in large quantities, and the output is of fine quality.

Agriculture. The soil in the valleys along the streams and at the foot of the mountains and hills is usually fertile, though but very little of it compares favorably in this respect with the soils of the great prairie states in the Mississippi Valley. Agriculture is the leading industry of the state. The farms are comparatively small, averaging less than 200 acres, and most of them are tilled by their owners. Formerly Vermont was known for its production of wheat, oats, corn and potatoes, but since the development of the great agricultural states in the Missippi Valley, the New England states have been unable to compete in the markets which the Western producers could reach; consequently, in recent years methods and products have been radically changed. Now intensified farming is generally practiced and the raising of wheat has given way to the raising of corn, which is very generally used as ensilage. Dairying is the chief agricultural industry. Excellent qualities of butter and cheese are made, and these find ready market in Boston and other Eastern cities. In the output of these products the state ranks among the first ten. Vermont has always been famed for the excellent breeds of horses produced there, and horses are still raised in large numbers. In some sections the raising of garden vegetables and apples for market is also a profitable industry, and Vermont is unsurpassed in the United States in the quality and quantity of maple sugar produced.

Manufactures. The chief manufacturing industries include dressing stone particularly marble and granite; the manufacture of scales, centered in Saint Johnsbury and in Rutland; the production of flour and other grist mill products; the manufacture of lumber products, and the manufacture of textiles, particularly woolen goods. Since the introduction of electrical power, many small factories have been established within the state, obtaining their power from mountain streams which were previously useless. This has increased the output of manufactures very materially since 1890.

Transportation. The northwestern part of the state finds a ready outlet by water through Lake Champlain and the Richelieu River, but these are closed to navigation during the winter season. Lines of railway traverse the state from north to south, both on the eastern and western sides. There are also numerous cross lines so that every county has good railway facilities, and nearly every town is on a line of railway or within ready access of it. The railways of the state are under the control of the Rutland, the Boston & Maine and the Grand Trunk systems, and the total mileage is about 1,075. A number of electric lines connect near-by towns.

Government. The legislature consists of a senate of thirty members and a house

of representatives of 246 members, the latter containing one representative for each town and city within the state. Both senators and representatives are elected every two years. The legislature meets biennially. The executive department consists of a governor, lieutenant-governor, secretary of state, treasurer and auditor, elected by the people for two years. The courts consist of a state supreme court of seven judges, a chancery court and county courts. The judges of the supreme court, the commissioner of education and some other officers are elected by the legislature for terms of two years. Women enjoy Presidential suffrage.

Education. The commissioner of education is at the head of the public school system. The township system is in vogue, in which the town constitutes the smallest unit for school purposes. County examiners are appointed by the governor and commissioner of education. It is the duty of the examiners to examine and license teachers. Supervision is by districts in which several adjoining towns are united. A superintendent who devotes his entire time to the work is appointed for each district. Graded schools are maintained in all of the larger towns and villages, most of which have high schools. The higher institutions of learning are the University of Vermont, at Burlington, with which is connected the State Agricultural College; Middlebury College, at Middlebury, and Norwich University at Northfield. Montpelier Seminary, at Montpelier; Goddard Seminary, at Barre; Saint Johnsbury Academy, at Saint Johnsbury; Vermont Academy, at Saxton's River, and Brigham Academy, at Bakersfield, are among the most prominent academies. There are normal schools at Johnson and Castleton. Teacher-training courses are also provided in a number of high schools and academies. In 1910 the normal school at Randolph was changed to the State School of Agriculture.

Institutions. The charitable and correctional institutions of the state include the state penitentiary at Windsor, the house of correction at Rutland, the industrial school at Vergennes, the state asylum for the insane at Waterbury, the soldiers' home at Bennington, the state sanatorium at Pittsford. There are also ten hospitals under the control of the state authorities.

History. The first white man to enter the territory of Vermont was probably Cham-

Items of Interest on Vermont

About 10,000 of the foreign-born inhabitants came from the British Isles. There are, besides, over 11,000 English-Canadians.

School attendance during the full school term is compulsory for children from six to fifteen years of age. No child less than sixteen who has not completed nine grades of school may work in any industrial establishment.

There are about 2,500 public schools in the state and nearly 65,000 enrolled pupils.

In January, 1918, Vermont had 295,000 milch cows, 189,000 other cattle, 89,000 horses, 106,000 sheep and 120,000 swine.

The marble quarries were first opened in 1785. They produce half of the marble of the United States.

During the summer months the people in the mountain and lake towns find entertaining the tourists a profitable occupation.

Vermont was the first state to adopt a clause in its constitution prohibiting slavery.

It was the first to be admitted after the adoption of the Federal Constitution.

The present constitution of Vermont was adopted in 1793.

Questions on Vermont

When was Vermont admitted to the Union?

What is the character of the surface of the state?

What is the highest mountain peak?

Name the principal rivers.

How has the introduction of electrical power affected the manufacturing industry?

What are the chief agricultural products?

How does Vermont rank in the production of maple sugar? Of marble?

What are the principal manufacturing industries?

For what products are some of the leading cities noted?

Why is the state a favorite summer resort?

plain (1609), but no settlements were made until 1665, when French trading posts were established on the western border. Vermont was the scene of numerous expeditions by both French and English during the French and Indian Wars. After the middle of the eighteenth century, the territory was a cause of dispute between New Hampshire and New York, each claiming jurisdiction over it, by reason of charters and royal grants. On accounts of the grants of lands made there by New Hampshire, Vermont came to be known as the *Hampshire Grants.* It was finally decided by England that New York had jurisdiction, but the settlers of Vermont, by means of organized militia, known as "Green Mountain Boys," resisted the establishment of the authority of New York. This resulted in several skirmishes.

During the Revolution, Vermont organized its own forces and fought with great effect against the Indians and British in the north. Meantime it set up a claim of independent statehood, and existed as an independent state for fourteen years, until it was admitted into the Union, March 4, 1791. Its progress during the nineteenth century was consistent. Its government in most respects was rather more democratic than that of other New England states. During the Civil War it furnished its full quota of troops, and it was the scene of the operations of the Fenians in 1866 and 1870. In 1852 an amendment prohibiting the sale of intoxicating liquors was adopted, but was repealed in 1902, high license and local option being substituted. Admiral George Dewey and Captain Charles E. Clark of the *Oregon* were among noted Vermonters; President Chester A. Arthur and Vice-President Levi P. Morton and William A. Wheeler were also among her sons. The state has always been known for the sterling character of its people, and in proportion to its population has been second to none in the number of eminent men it has furnished to the nation.

Related Articles. Consult the following titles for additional information:

CITIES

Barre
Bennington
Burlington
Montpelier
Rutland

PHYSICAL FEATURES

Champlain, Lake
Connecticut River
Green Mountains
Memphremagog (lake)
Taconic Mountains

HISTORY

Allen, Ethan
Champlain, Samuel
Green Mountain Boys
New Hampshire (history)

VERMONT, UNIVERSITY OF, a coeducational institution of learning, founded in 1791 at Burlington. In 1862 the university was assured a share in the benefits of the land-grant act passed by Congress, and three years later the Vermont Agricultural College was incorporated with it. "State Agricultural College" is still a part of the legal title of the institution, which is organized into colleges of arts and science, engineering, agriculture and medicine. There is a student enrollment of about 900, and a faculty of about 115. The library contains about 99,000 volumes.

VERNE, *vairn,* JULES (1828–1905), a popular French romancer. He studied law for some time, but afterward began writing short pieces for the stage. He then began to write stories of adventure. The highly imaginative and fantastic exploits he recounted were given an air of plausibility by the author's manner of presenting them as scientifically possible. His first essay in the vein of the marvelous was *Five Weeks in a Balloon.* This was followed by *Twenty Thousand Leagues under the Sea, From the Earth to the Moon, Around the World in Eighty Days, Michael Strogoff* and *The Mysterious Island.* Most of his books have been translated into the various European languages, and some even into Arabic and Japanese. They will long remain popular for their ingenuity and their lively style.

JULES VERNE

VERONA, *va ro'nah,* ITALY, next to Venice the most famous city in the Venetian plain. The city is so old that an old Roman amphitheater built by the emperor Diocletian still stands, for many years a ruin, eloquent of the dead past, but now restored. This building is over 500 feet long and is 106 feet high; it was built to seat 20,000 people. In the vicinity of the busiest part of the town is a marble tablet marking the spot where the people believe Juliet lived, and to whose house came Romeo. Through the town runs the swiftly-flowing Adige River, which is spanned by seven bridges. Population, 1916, about 86,000.

VERONESE, *va ro nay' zah,* PAUL (1528–1588), the popular name of Paolo Cagliari, an eminent Italian artist, born at Verona. He studied painting under his uncle, Antonio Badile, and worked successively in Venice, Rome and other cities of Italy; but Venice was his chief residence. Some idea of his talent may be gained from the fact that he was soon recognized as a rival of Titian and Tintoretto. He was an excellent colorist, as were most of the Venetian school, and he was distinguished by the richness and fertility of his imagination. His pictures are exceedingly numerous and varied in subject. Among his masterpieces are *The Marriage at Cana* (now in the Louvre), *The Calling of Saint Andrew to the Apostleship, The Rape of Europa, The Family of Darius at the Feet of Alexander, Adoration of the Magi, Consecration of Saint Nicholas and Saint Helena* and *The Vision of the Invention of the Cross.* The last five mentioned are in the National Gallery. Veronese died at Venice in the full maturity of his genius.

VERON' ICA, SAINT, a female saint, who, according to legend, met Jesus Christ bending under the weight of the cross and offered him her veil to wipe the sweat from his brow. The divine features were found miraculously impressed on the cloth, and this veil was brought from Palestine to Rome, where it is still preserved by the canons of Saint Peter's. Milan and other places claim they have the genuine veil.

VERRAZANO, *ver a tsah' no,* GIOVANNI DA (1480?–1527), a Florentine navigator, about whose life little is known. About 1523 he made his first voyage of discovery, and in 1524 he voyaged to America, probably touching the coast of North Carolina. He wrote a letter to Francis I, describing this voyage, and this letter is almost the only source of information concerning his discoveries. Some accounts relate that Verrazano was hanged as a corsair; others state that he died while preparing for another expedition to America. The exact truth may never be known.

VERSAILLES, *ver sah'y',* FRANCE, the capital of the department of the Seine-et-Oise, situated twelve miles southwest of Paris. The town is noted as the location of the magnificent Palace of Versailles, erected in 1661 by Louis XIV and since that time the scene of a number of important and dramatic events in the history of France and of the

world. Here, in 1871, the French signed the hard treaty terms which concluded the Franco-German War; in July, 1919, the victorious allies concluded in the same palace peace terms with Germany at the close of the World War (see VERSAILLES, PALACE OF; VERSAILLES, TREATY OF). From 1871 to 1879 Versailles, was the seat of government of the republic of France. Population, 1911, 60,458.

VERSAILLES, PALACE OF, the famous residence of the Bourbon court and subsequent place of meeting of many important conferences for the adjustment of national and international affairs, including that following the World War. The palace was built as a residence by Louis XIV in 1661, at a cost of $100,000,000. It was permanently occupied by the court about 1682 and remained its center for a hundred years, or until the overthrow of the Bourbons at the opening of the French Revolution. Since that time it has been used principally as a vast museum, its collections representing the development of French history and art from the time of Clovis to the present day. Especially interesting is a collection representing the era of the Crusades.

The Versailles palace is three stories high, in form a great square with wings at either side and at the back projecting into its surrounding park. It has an imposing façade a quarter of a mile long, above which are inscribed the words, *A toutes les gloires de la France* ("To all the glories of France"). The extensive Versailles gardens are filled with terraces, fountains, decorative ponds and artificially arranged trees and plants.

With the palace are associated the names of Mme. de Pompadour, Mme. du Barry and Marie Antoinette. Here was signed the Treaty of 1783 between England, France and Spain on the same day that England recognized the independence of the United States. Here, in 1789, was held the meeting of the States-General which formed the opening act of the French Revolution. During the Siege of Paris, 1870–71, King William of Prussia made his headquarters here, and there he was proclaimed Emperor William I of Germany. Again, in 1919, the interest of the world centered on Versailles, as the conference of the powers adjusted anew the affairs of a world shaken by the four years of the World War, this time with a new diplomacy based on the principles of a League of Nations.

Hall of Mirrors, Where Treaty Was Signed

VERSAILLES, TREATY OF, the name of the treaty which formally concluded the World War, negotiated by representatives of the allied powers on the one hand, and those of the central powers, including Turkey, on the other. There were four separate treaty agreements, made with Germany, Austria, Bulgaria and Turkey, respectively. The preliminary work on the agreements was carried on in Paris, but the name Versailles is applied to the treaty because the actual signing of the agreement with Germany, the head of the Teutonic alliance, took place in Versailles, a suburb of Paris. The German treaty was the first one negotiated, and was signed in the famous Hall of Mirrors, in the Palace of Versailles, in the same room where, in 1871, William I was crowned emperor of Germany at the close of the Franco-German War.

The peace conference began sessions at Paris on January 18, 1919. The United States, the British Empire, France, Italy and Japan were represented by five delegates each; Brazil, Belgium and Serbia were represented by three each, and there were two each from China, Greece, Poland, Portugal, the Czecho-Slovak Republic, Rumania and the kingdom of Hedjaz. Two delegates were allotted respectively to Australia, Canada, South Africa and India, and one to New Zealand, as these British possessions had made great sacrifices for the allied cause. Other minor nations were allowed one delegate each, namely, Siam, Cuba, Guatemala, Haiti, Honduras, Siberia, Nicaragua, Panama and Montenegro. Each delegation acted as a unit. The most influential group consisted of the heads of the American, British, French and Italian commissions—President Woodrow Wilson and Premiers Lloyd-George, Clemenceau and Orlando. They were termed "the big four."

The conference held its sessions in the building of the Ministry of Foreign Affairs, meeting in a splendid reception room originally called Salle d'Horloge (Hall of the Clock). It required nearly six months to ne-

gotiate a treaty with Germany. On May 7, 1919, 109 days after the associated powers had begun their deliberations, German envoys received the terms on which the victorious powers were willing to make peace. The head of the German commission was Count von Brockdorff-Rantzau. A period of fifteen days was allotted the German envoys in which to reply to the terms. An extension of this period was granted, however, and German counter proposals were not delivered until May 29. On June 16, a revised version of the treaty, which had been slightly modified, was tendered the Germans, and on that date the delegation started for Germany. The German National Assembly at Weimar ratified the revised treaty on June 22, and on June 28 the terms were signed in Versailles. It was found necessary to appoint a new commission, the original envoys refusing to sign. A summary of the terms follows:

How Germany Paid. Germany was stripped of all colonial possessions, required to cede certain portions of its European domain, and forced to agree to the payment of heavy indemnities.

Territorial Changes. The following changes in Europe were authorized:

To France—Alsace-Lorraine, 5,600 square miles.

To Belgium—Two small districts (Eupen and Malmedy) between Holland and Luxembourg, 382 square miles.

To Poland—Part of Silesia and most of Posen and West Prussia, 27,686 square miles.

To league of nations—Mouth of Memel River and internationalized area around Danzig, 729 square miles; basin of the Sarre (internationalized temporarily), 738 square miles.

Territory depending on vote of people: Southeastern third of East Prussia and districts along the North Vistula River, 5,785 square miles. Northern Schleswig, 2,787 square miles. Upper Silesia.

France was given the right to use the output of the Sarre coal mines for fifteen years. A vote is to be taken at the end of that period to decide the future status of the Sarre valley. Germany ceded in all about 43,700 square miles.

The following changes in colonial possessions were authorized:

Togoland and Kamerun—future to be determined by the league of nations.

German East Africa—under the mandate of Great Britain.

German Southwest Africa—under the mandate of South Africa.

German Samoan Islands—under the mandate of New Zealand.

Caroline, Marshall and Ladrone Islands—under the mandate of Japan.

New Guinea—under the mandate of Australia.

Total, about 1,139,800 square miles.

German concessions in China, notably Kiaochau and the Shantung peninsula, were transferred to Japan.

Other Conditions. Germany lost most of its navy and most of its merchant marine, and the army was ordered reduced to 200,000 men. Possession of fourteen submarine cables was ordered relinquished, and sovereignty over the Kiel Canal, the Rhine and other important rivers was lost. Reparation for all damage done by the war was demanded, the amount to be determined by international commissions. (Estimated, $25,000,000,000 or more.) Luxembourg was freed from the German customs-union. Germany was required to recognize the independence of German Austria and Czecho-Slovakia, French control in Morocco and the British protectorate in Egypt. Though not admitted as a member, Germany was required to recognize the principle of the league of nations, the provisions for which occupied the first section of the treaty.

Austrian Settlement. The complete text of the Austrian treaty was handed to the Austrian delegation at Saint Germain, France, on July 20, the first section having been tendered on June 2. Austria was reduced to the following territories:

PROVIDENCE	AREA	POPULATION
Lower Austria	7,658	3,532,000
Upper Austria	4,628	853,000
Salzburg	2,763	215,000
Carinthia	3,989	396,000
Styria	8,662	1,444,000
Tyrol and Vorarlberg	11,312	1,092,000
	39,012	7,532,000

The exact boundaries were left to the determination of commissions, as there were disputes with Jugo-Slavia, Czecho-Slovakia and Italy to be settled.

Austria's army was reduced to 30,000 men, and the country was required to guarantee reparations for damages, the amount to be determined by a commission, as in case of Germany.

Turkish Settlement. It was generally accepted that the Turkish Empire would be dismembered. Among several plans proposed, the following is believed to embody the final demands:

That Constantinople be placed under the administration of an international board, with the sultan exercising nominal suzerainty; that the greater part of Anatolia, or

Asia Minor, be left under Turkish control, as the population is dominantly Turkish; that Turkey in Europe be divided between Greece and Bulgaria, and that Greece be given Smyrna and islands off the western coast of Anatolia; that Arabia be united under the king of Hedjas as an independent state; that Armenia be recognized as an independent state under the guardianship of America or Great Britain; that Syria and Mesopotamia be made independent states under French and British protection, respectively; that Palestine be a separate state under British protection.

Bulgarian Settlement. While preliminary work was being carried on in regard to the Bulgarian treaty, the Bulgars were asking that the Dobrudja and Macedonia be incorporated in the Bulgarian kingdom. The Bulgarian claims, as set forth by the Foreign Minister, were as follows:

> In the East we think we are justified in asking for the restoration of the Adrianople district as far as the Media-Enos line, which was awarded to Bulgaria by the London treaty of May, 1913. On the south we expect free access to the Aegean Sea from Enos to Orfani. In Macedonia we expect that portion which was admitted by the Serbians in their treaty with us in 1912 as of Bulgarian origin and character, which includes the towns of Monastir, Prilep, and Veles (Koprili). As for the part which is designated in the treaty as the "contested zone," which includes the districts of Uskub and Kumanova, the decision respecting which was to be left under the terms of the treaty to the then Russian emperor, we are content to leave to the peace conference to determine. As to Dobrudja, we hope the peace conference will undo the injustice done Bulgaria when this province was taken from her by the Russians in order that they might give it to Rumania in return for Bessarabia.

There was a feeling on the part of the allied commissioners that Bulgarian demands were excessive, and that they could not be granted. Settlement of the Balkan boundaries in a just and impartial way is essential for the future peace of Europe, and the whole problem was being considered from every point of view. See WORLD WAR.

VERSE, *vurs,* a line of poetry, or, more commonly but less correctly, a stanza composed of several lines. The term is also used, in its broader sense, to mean the measured and cadenced form of speech or composition adopted in poetry. Verse, as simply cadenced lines, is of great antiquity, but the use of rhymed cadences is comparatively modern. Blank verse is verse in which the lines do not end in rhymes. For the classifications of verse on the basis of meter, see METER.

VER'TEBRATES, or **VERTEBRA'TA**, the highest branch of the animal kingdom, comprising all creatures having backbones. Vertebrates are classified as fishes, amphibians, reptiles, birds and mammals. Their bodies are capable of division into head, trunk and tail, and they have typically four limbs (fins in fishes) and an outer skin that consists of more than one layer of cells. The skeleton is internal, and the central nervous system consists of a nerve cord and brain, to which latter the sense organs are connected. Vertebrates also possess a system of sympathetic nerves, a digestive tract, respiratory organs (gills or lungs), special excretory organs, and reproductive organs, usually with separate sexes.

In the long process of evolution these anatomical essentials have been highly developed and variously differentiated. Not till the Tertiary Period, far down the line of the geological ages, did the mammals appear, while man, the youngest of creatures, is the development of the Pleistocene Age. As man advances in scientific knowledge and mechanical skill, penetrating to every part of the world, the other vertebrates become fewer and fewer, except as he domesticates them and raises them in numbers for use as food, the manufacture of clothing or means of transportation.

Related Articles. Consult the following titles for additional information:

Amphibians	Fish and Fisheries	Reptiles
Birds	Mammals	Rodents
Carnivora	Marsupialia	Ungulates
Cetacea	Primates	Zoölogy

VERTIGO, *vur' te go,* an attack of giddiness, in which stationary objects appear to move in various directions, the person affected finding it difficult to maintain an erect position. It is a common symptom of excessive or defective supply of blood to the brain, as well as of nervous and general debility, though it also frequently arises from the disturbance of the digestive organs. Rapidly whirling the body will produce a severe form of vertigo.

VESPASIAN, *vez pa' zhe an* (9–79), emperor of Rome. After serving with distinction in Germany and in Britain, as commander of a legion, he was made consul. He afterward became proconsul of Africa; and on the rebellion of the Jews, he was sent with

an army into Judea. He reduced nearly all Galilee and was preparing to attack Jerusalem when he received news of Nero's death (A. D. 68). Then followed the emperors Galba, Otho and Vitellius, and in A. D. 69. Vespasian was himself elected emperor by the army. He left the siege of Jerusalem to his son Titus and returned to Rome. He immediately reformed the discipline of the army, purified the senatorial and equestrian orders and improved the administration of justice. He was the patron of learned men, particularly Quintilian, Pliny and Josephus. He rebuilt a part of the city, restored the capitol and erected the gigantic amphitheater, the ruins of which are still celebrated under the name of the *Colosseum*.

VESPUCCI, *ves poot' chc,* AMERIGO. See AMERICUS VESPUCIUS.

VES'TA, a Roman divinity, the goddess of the hearth. She was worshiped, along with the Penates, at every family meal, when the household assembled round the hearth, which was in the center of the room. Her public sanctuary was in the Forum, and the sacred fire was kept constantly burning in it by the vestal virgins, her priestesses. A special building, near the temple, was set aside as the dwelling of the vestals. Each community had a hearth, on which was kept constantly alight the sacred fire of Vesta, and colonists setting out from a city took with them some of the old fire to kindle a flame in their new home. Few legends are connected with Vesta.

VESUVIUS, *ve su' vi us,* the only active volcano in Europe, situated on the Bay of Naples, in Italy. Its first recorded eruption took place in A. D. 79, when the city of Pompeii was buried under twenty feet of loose ashes and Herculaneum was covered by a torrent of mud. The elder Pliny, in command of the Roman fleet at Misenum, sailed to the relief of the distracted inhabitants, but was suffocated with them by volcanic vapors. The catastrophe is graphically described by his son, the younger Pliny, in two letters written to Tacitus, long after the event.

Another eruption of Vesuvius occurred in the year of 472, when ashes were carried as far as Constantinople. In 1794 and in 1822 there were also violent eruptions, and a series of lesser eruptions took place in the latter part of the last century, beginning with 1865. The latest eruption occurred in 1906. The mountain is a state of constant activity, and, being of easy access, has been studied by more scientists and visited by more tourists than any other volcano in the world. An electric railway takes passengers from Naples to within 450 feet of the crater, and under direction of a guide visitors may descend some distance into the crater. An observatory is located on the west shoulder of the mountain, at an elevation of 2,200 feet.

Geologically, Vesuvius is thought to be of recent origin. It is a solitary mountain, with a base about thirty miles in circumference and is surmounted by two summits. The higher one, Vesuvius proper, is the cone from which are emitted the streams of lava. The lower one, known as Mount Somma, partly encloses the active cone. The mountain varies in height according to the amount of material thrown out or carried away by eruptions, averaging about 4,000 feet above the sea level.

Related Articles. Consult the following titles for additional information:

Herculaneum	Pompeii
Naples	Volcano

VETCH, a common name, rather loosely applied to several genera of climbing plants that are natives of the temperate zones. Many of them have been cultivated as forage plants for ages, and some yield edible seeds. Recently several species have been introduced into the United States for winter forage; the *hairy vetch* makes a good crop yielding from two to four tons of hay an acre. In Europe *spring vetch,* or *tare,* is more common. The plant has bluish-pink flowers resembling those of the pea, and compound leaves composed of twenty or thirty leaflets.

VET'ERINARY MEDICINE, the art which deals with the nature, causes and treatment of the disorders of the domestic animals. The first veterinary school was instituted in 1762 at Lyons, France; in 1766 that at Alfort, near Paris, was opened. A similar institution was established at London in 1791, and in the year following, one in Berlin. In the United States veterinary chairs have been added to the University of Pennsylvania, Cornell University and to several other leading universities, as well as to many of the schools of agriculture. Besides these, there are many private schools that give thorough instruction. Recently the requirements of admission to veterinary courses have been materially advanced, and in the better schools four-year courses of study are required.

The veterinarian must have a thorough knowledge of the anatomy and physiology of domestic animals, and of the causes and effects of the diseases common to them. Moreover, he must be a keen observer, for he must rely solely upon his observation in making a diagnosis; the horse or the cow cannot tell him how it feels or where pain is located. All states and the Canadian provinces require every veterinarian to possess a diploma from an approved school, or to take a rigid examination before he is allowed to practice.

One of the most valuable services that the veterinarian renders is the detection and prevention of contagious diseases among domestic animals, and his services for this purpose are usually authorized by the state, which maintains a board or commission, whose duty it is to see that the laws for preventing the spread of contagious diseases among domestic animals are enforced.

The Bureau of Animal Industry, in the United States Department of Agriculture, takes care of veterinary questions that come before the government, and the states and large cities have veterinarians who investigate diseases and attend to the enforcement of the veterinary laws of the districts in which they have power. Important documents are issued for public circulation by the Bureau of Animal Industry and by the experiment stations and boards of agriculture in the several states. In its progress veterinary medicine has kept pace with human medicine.

VE'TO, from the Latin, meaning *I forbid*, refers to the power of a chief executive to negative any legal measure originating in a lawmaking body. There are several forms of veto power, which may all be included in two main classes—*absolute* and *limited*. In the case of the former the executive action is final; in the case of the latter the legislature may override the executive decision, if an extraordinary majority is in favor of the bill.

In Great Britain the veto of the ruler is absolute, but the power has not been exercised since 1708. In France the veto is limited, of the form known as suspensive; that is, the President may suspend the operation of a law and demand its reconsideration. A similar form of limited veto is in effect in the United States, where the Presidential veto may be overriden by a two-thirds vote of the members of each house of Congress.

VI'ADUCT, a structure for carrying a waterway or roadway across a valley or lowland or over a public highway. Viaducts of the older type usually consist of a series of arches of brick work, masonry or spans of steel, but of late they have been largely constructed of reinforced concrete. The viaduct crossing the Kaw River valley, connecting Kansas City, Mo., and Kansas City, Kan., has a length of 8,400 feet. The viaduct at Des Moines, Iowa, used by the Chicago & North Western Railroad, is 2,685 feet in length. Other notable viaducts are those over Tunkhannock Creek and Martin's Creek on the Lackawanna road, the one across the Pecos River in Texas, the viaduct over the White Elster at Goltsch, Saxony, and that at Gokteik, Burma. See BRIDGE.

VIC'AR, in a general sense, a representative or deputy authorized to perform the duties of another. In the Church of England a vicar is the priest of a parish, who receives only the smaller tithes, or a salary. In the United States the large city parishes which support two or more churches maintain a vicar for the clerical duties of the chapels.

In the Roman Catholic Church *vicar apostolic* is a bishop who possesses no diocese, but who exercises jurisdiction over a certain district by direct authority of the pope; *vicar-general* is the official assistant of a bishop or archbishop. The Pope calls himself the *Vicar of Christ on earth.*

VICE-ADMIRAL. See ADMIRAL.

VICE-PRESIDENT, the official of the United States government who is second in executive authority to the President. The Vice-President is chosen in the same way and for the same length of term as the President. A candidate for Vice-President must be a natural-born citizen of the United States, must have reached the age of thirty-five years and must have been for fourteen years a resident of the United States. He is inaugurated in the Senate chamber at Washington on the same day and immediately following the inauguration of the President. His chief duty is to preside over the sessions of the Senate. He is not allowed to vote, except in case of a tie. He becomes President if the President dies or is permanently incapacitated from performing the duties of his office; Tyler, Fillmore, Johnson, Arthur and Roosevelt succeeded to the Presidency in this manner. The salary of the Vice-President is $12,000 a year.

VICE'ROY, an official who rules a province or colony in the name of a sovereign, there-

fore, a vice-king. The Governor-General of British India is unofficially called a viceroy, and the title has also been applied to the Lord-Lieutenant of Ireland.

VICKS'BURG, MISS., the largest city in the state and the county seat of Warren County, forty-three miles west of Jackson, on the Mississippi River, a few miles below the mouth of the Yazoo, and on the Yazoo & Mississippi Valley, the Alabama & Vicksburg, and the Vicksburg, Shreveport & Pacific railroads. The city is situated on a high bluff overlooking the river. Near it is the Vicksburg National Military Park, which restored the Vicksburg battle ground as it was in 1863. The principal buildings of the city are the courthouse, the Federal building and the Mississippi State Charity Hospital. The educational institutions include Saint Aloysius College for boys, Cherry Street College for colored students, and the Saint Francis Xavier Academy.

Vicksburg is the center of a large cotton-raising district and is noted for its cotton trade. It has numerous manufacturing establishments, including cottonseed-oil mills, saw and lumber mills, box, furniture, wagon, ice and boat-oar factories, canning establishments, boiler works, car shops, etc.

The town was laid out on the plantations of John Lane and William Vick, and the city was incorporated in 1840. During the early part of the Civil War it was strongly fortified, and after a long siege it was surrendered to General Grant on July 4, 1863. Population, 1910, 20,814; in 1917, 23,179 (Federal estimate).

VIC'TOR EMMAN'UEL II (1820–1878), king of Sardinia, the son of Charles Albert. His aptitude for a military career became evident when he commanded the Savoy brigades against Austria (1848–1849), and he distinguished himself in the Battle of Goito by his reckless valor. After the Battle of Novara his father abdicated, and Victor Emmanuel ascended the throne of Sardinia. He had then to negotiate with Austria under most unfavorable circumstances, but he steadily refused to give up the principle of representative government in the Sardinian constitution, and this gained for him the good will of the Italian people. Under the advice of his celebrated minister, Cavour, he regulated the finances, reorganized the army and secularized the church property, for which he was excommunicated by the Pope.

Victor Emmanuel took part in the Crimean War against Russia, and in 1859, assisted by France, he renewed the contest with Austria, winning the battles of Magenta and Solferino. By the Treaty of Villafranca and the Peace of Zurich, which followed these successes, Lombardy was added to his dominions, but he had to cede Savoy and Nice to France. Parma, Modena and Tuscany now became united to Sardinia, and Garibaldi's successes in Sicily and Naples brought the whole of Southern Italy over to Victor Emmanuel. Early in 1861, he assumed the title of king of Italy. By the Peace of Vienna (1866) Austria ceded Venetia, and on the withdrawal of the French garrison from Rome in 1870 that city annexed itself to Italy. The king entered Rome on July 2, 1871, and took up his residence in the Quirinal. He was succeeded by his son Humbert.

Related Articles. Consult the following titles for additional information:
Cavour, Count — Humbert I
Crimean War — Italy (history)
Garibaldi, Giuseppe — Sardinia, Kingdom of

VIC'TOR EMMAN'UEL III (1869–), king of Italy, son of Humbert I and Queen Margharita. He entered the army in 1887 and was steadily advanced in rank. At the coronation of Nicholas II of Russia, in 1896, and at Queen Victoria's jubilee, in the following year, he was present as his father's representative. In 1896 he married Princess Helena of Montenegro. When his father was assassinated in 1900, he succeeded to the throne, and he proved a just and liberal ruler. The king assumed active command of the Italian armies on the Austrian front when Italy entered the World War, and his attitude throughout the war strengthened him in the esteem of his subjects. The royal pair have three children, princesses Yolanda and Mafalda, and Prince Humbert.

VICTOR EMMANUEL III

VICTO'RIA (1819–1901), a beloved Queen of the United Kingdom of Great Britain and Ireland, and Empress of India. She was the only child of Edward, Duke of Kent, fourth

son of George III, and was born at Kensington Palace. The duke died when Victoria was only eight months old, and she was brought up by her mother with exceptional prudence and care. Upon the death of her uncle William IV, June 20, 1837, she ascended the throne and was crowned at Westminster, June 28, 1838. The English people knew little of their young queen, who had been brought up in seclusion, but she soon proved herself possessed of the clear judgment and moderation which a sovereign needs, and of a thorough goodness which won the hearts of her subjects.

During the reign of Victoria there were eighteen changes of government, the following Premiers taking office at the dates given: 1835, Melbourne; 1841, Peel; 1846, Russell; 1852, Derby; 1852, Aberdeen; 1855, Palmerston; 1858, Derby; 1859, Palmerston; 1865, Russell; 1866, Derby; 1868, Disraeli; 1868, Gladstone; 1874, Disraeli; 1880, Gladstone; 1885, Salisbury; 1886, Gladstone; 1886, Salisbury; 1892, Gladstone; 1895, Salisbury.

VICTORIA

The leading events of the reign were the confederation of Canada; the Opium War in China; the abolition of the Corn Laws, under the administration of Sir Robert Peel; the successive steps in parliamentary reform; the enfranchisement of the Jews; the Catholic Emancipation act; the assumption of the government of India by the Crown; the Crimean War; the wars with Afghanistan, Abyssinia the Zulu tribes and Egypt; the long struggle on the Irish home-rule question the beginning of the South African War, and the Australian federation.

In February, 1840, Victoria was married to her cousin, Prince Albert of Saxe-Coburg-Gotha, and the marriage proved an unusually happy one. Four sons and five daughters were born to the royal couple. Victoria, Princess Royal, born in 1840, married in 1858 to Frederick William, afterward German Emperor, died in 1901; Albert Edward, Prince of Wales, born in 1841, married to Alexandra, daughter of the king of Denmark, succeeded to the throne on the death of his mother; Alice, born in 1843, married in 1862 to Prince Frederick William of Hesse, died in 1878; Alfred, born in 1844, married in 1874 to Marie, daughter of the Czar of Russia, died in 1901; Helena, born in 1846, was married in 1866 to Prince Christian of Denmark; Louise, born in 1848, was married in 1871 to the Marquis of Lorne; Arthur, born in 1850, was married in 1879 to Princess Louise Marguerite of Prussia; Leopold, born in 1853, married in 1882 to Princess Helen of Waldeck, died in 1884; Princess Beatrice, born in 1857, was married in 1885 to Prince Henry of Battenberg. In 1861 the Prince Consort died, and the queen withdrew from social life.

During the reign of Queen Victoria, Great Britain enjoyed a long era of uninterrupted prosperity; peace and contentment prevailed at home, and, with very rare exceptions, relations of amity were maintained with foreign powers. In length her reign was unprecedented in the world's history. It is true that Louis XIV of France ruled over a longer period than she, but subtracting the years during which he was under a regent, his responsible tenure of the crown was shorter than hers. Although George III nominally ruled sixty years, owing to his insanity a part of his reign was also under a regent.

In 1887 the people of Great Britain and the colonies celebrated the golden jubilee, or fiftieth year of Queen Victoria's reign. In 1897 they celebrated the diamond jubilee, with ceremonies more imposing than had ever attended any similar event. Representatives of all the colonies were present, and a grand procession, viewed by millions, moved through the streets of London. Victoria died January 22, 1901.

Related Articles. Consult the following titles for additional information:

Corn Laws
Crimean War
Great Britain (history)
India (history)
South African War

VICTORIA, a state of the Australian Commonwealth, situated in the southeastern part of the continent. Victoria is next to the smallest state of the Commonwealth, but is second in population. Only Tasmania has a smaller area, and New South Wales is the only state with more inhabitants. It is bounded on the north by New South Wales, on the south and southeast by the Indian

Ocean and on the west by South Australia. Its area is 87,884 square miles, or a little less than the areas of Virginia and North Carolina combined. It has about 600 miles of sea coast, with a considerable number of bays and indentations, especially about the middle, where Port Phillip Bay, with an area of 875 square miles and an entrance barely two miles wide, affords shelter sufficient for the largest fleet.

Surface and Drainage. The interior, though diversified by mountains, is chiefly distinguished by vast, unwooded plains, mostly occupied as pasture. There is one principal mountain range, a portion of the Great Dividing Range of Eastern Australia, running from east to west through the state, with various offshoots. The eastern portion of it, called the Australian Alps, with numerous northern and western ramifications, rises to 6,500 feet in Mount Bogong and to 6,100 feet in Mount Hotham, and has several other peaks exceeding 5,000 feet in height. The most westerly portion, called the Grampians, runs north and south, and in Mount William reaches a height of 5,600 feet. The Grampians and the Australian Alps are connected by such ranges as the Pyrenees and Hume Range, containing numerous cones and extinct craters. This is the region of the gold fields. The rivers are numerous, but they are generally small and dry up in summer, leaving the country parched. The chief is the Murray, which rises in the Australian Alps and forms the northern boundary of the state for 980 miles. It is 1,300 miles long and is navigable for several hundred miles.

The climate of Victoria is temperate, but liable to sudden changes, and hot winds blow at intervals from November to February, causing great discomfort. The hottest period is in January and February, when the thermometer sometimes rises to 108° in the shade.

Industry and Trade. Victoria is the principal gold-producing colony of Australia, the yearly output being valued at $9,000,000. Tin, antimony, copper and coal are also among the minerals worked.

General farming is quite extensively followed. The chief crops among the cereals are wheat, oats and barley. Hay is grown, and forage crops are also raised. Among fruits, grapes take the lead, and considerable attention is given to the manufacture of wine. Stock raising is important, and wool growing is the chief branch of agricultural industry. The state has over 12,000,000 sheep, and the annual output of wool averages over 100,000,000 pounds.

The manufacturing industries are quite generally distributed, and include the manufacture of textiles, machinery, food preparations, butter and cheese and malt and spirituous liquors.

Most of the commerce is with Great Britain, and in its foreign trade Victoria is the second state of the commonwealth. The chief exports are wool, gold, dairy products and wheat. Railway lines extend to all the most important trade centers and connect these directly or indirectly with Melbourne, the chief city and commercial port. In all, there are about 4,000 miles of railway in the state.

Government. The governor, who is the chief executive officer, is appointed by the British sovereign. The legislature consists of a council of thirty-four members, who are chosen for six years, and an assembly of sixty-five members, elected for three years. Suffrage is granted to men and women on equal terms. Melbourne, the capital, is the second largest city of Australia, following Sydney. Population of the state, 1911, 1,315,551; in 1917, estimated at 1,402,650.

Related Articles. Consult the following titles for additional information:
Australia
Ballarat
Melbourne
Murray River

VICTORIA, B. C., capital of the province, is situated on the southeastern extremity of Vancouver Island, on the Strait of San Juan de Fuca, seventy-five miles northwest of Seattle, Wash. It is within three miles of Esquimault, a naval base with one of the finest harbors on the Pacific coast. The city is well laid out and has good streets; excellent roads connect it with the surrounding country. The public buildings include the parliament house, the government offices and the provincial museum and library, the city hall, the courthouse, a marine hospital, the Anglican Cathedral and exposition buildings. Victoria is an important industrial center and has lumber mills, shipyards, potteries, powder works and other manufactories. It also has a large trade in salmon. Originally a post of the Hudson's Bay Company, it was incorporated as a city in 1862, and until the founding of Vancouver was the largest Canadian city on the Pacific coast. Its import trade is large, the value of products shipped

in yearly being about $10,000,000. Population, about 60,000.

VICTORIA CROSS, the most highly-prized British military and naval decoration, instituted as a recognition of valor in the presence of the enemy at the close of the Crimean War in 1856. It is granted to soldiers and sailors of any rank, including native officers and men of the Indian army. Up to 1913 only 522 crosses had been awarded; this number was considerably increased during the World War. The cross is the more valuable because it is awarded sparingly, and only for the most conspicuous acts of bravery and devotion to the Empire.

VICTORIA FALLS, a celebrated cataract in the Zambezi River, in Rhodesia, South Africa, discovered by Livingstone in 1855 and named by him in honor of Queen Victoria. After flowing for a long distance over a rough and broken plateau, covered with brush and stunted trees, the Zambezi plunges suddenly into a chasm nearly 400 feet deep. The falls, 3,000 feet in width and 360 feet in height, are the most magnificent in the world. At low water the fall is broken by projecting rocks and is described by an observer as resembling a film of delicate lace, but when the river is swollen during the rainy season, an unbroken sheet of water is hurled over the ledge, forming a cataract unequaled elsewhere in the world. The roar of the falls can be heard for twenty miles, and the cloud of spray thrown into the air is visible for ten miles. Because of this cloud, the natives named the cataract *Mosi-oa-tuni*, which means *roaring smoke*.

Below the cataract the Zambezi flows for a long distance through a narrow gorge, with nearly perpendicular walls of basalt. Just below the falls the Cape-to-Cairo Railway crosses the river on a magnificent steel bridge, 600 feet long and 420 feet above the water; it is the highest structure of the kind in the world. From this bridge a magnificent view of the falls is obtained.

VICTORIA NYAN'ZA, the largest lake in Africa, having a surface area of 26,000 square miles and after Lake Superior the largest body of fresh water in the world. It was discovered in 1858 by Captain Speke and named for Queen Victoria (*nyanze* is the local word for *lake*). It lies about 600 miles from the eastern coast and is crossed by the equator. It is fed by several streams, the most important being the Kagera to the west, and drains an area of 92,000 square miles, where there is an annual rainfall of seventy-five inches. It is the principal source of the Nile River. As the Nile issues from the lake it forms the Ripon Falls, which are about 1,200 feet across. The lake is rocky and shallow and is dotted with islands. Port Bell, Entebbe and Jinja are the principal ports.

VICUNA, *ve koo'nyah*, a small animal of the camel family, somewhat resembling a wild goat or an antelope, which inhabits the Andes Mountains in South America. It is economically valuable because of its soft, silky, brown wool, which is of better quality even than that of the alpaca. It is commonly seen in herds of from six to fifteen females and one male. The animals are very timid, and have never been domesticated.

VIENNA, *ve en'nah*, the capital and largest city of the new republic of Austria, before the great war the fourth city in Europe in population, and one of the most pretentious capitals in the world. The day of Vienna's outstanding influence is past. By the terms of the peace treaty of 1919 Austria was reduced to a state of less than 8,000,000 inhabitants, and out of the old domain were erected several independent states with capitals of their own. It is not to be expected that the new Austria can support a capital of over 2,000,000 inhabitants, which was the population of Vienna at the outbreak of the war.

The city was formerly the center of Austrian social life and gayety, of the national administration, of art, education and music, of banking, commerce and finance. As a result of the disastrous war the wealth of Vienna disappeared, as did the court and the prestige of the aristocracy. The people who were left were burdened with debts and physically weakened by the privations of the war.

General Description. The city is situated on the south bank of the Danube, 330 miles south-southeast of Berlin and 630 miles east of Paris. The site is picturesque, for the plain on which the city was built is bordered by mountains, whose bases are covered with magnificent forests. A branch of the Danube, known as the Danube Canal, traverses the city from northwest to southeast. This canal is spanned by many bridges, and by the construction of a lock a section of it has been made into a capacious harbor.

Vienna is built upon the plan of the old European cities, containing an inner, or central city, surrounded by suburbs, which are now incorporated in the city and divided into districts. The old town, or Innere Stadt, occupying the center of the city, was formerly enclosed by a wall and fortifications. In 1858 these were removed, and a magnificent boulevard, the Ringstrasse, was erected upon their site. This is one of the finest streets in Europe, and upon it are found most of the important public buildings of the city. In the newer parts the streets are broad, and there are a number of boulevards and parks. Chief among these is the Prater, in the southeastern quarter, having an area of over 4,000 acres. The streets, parks and bridges are decorated with numerous statues and monuments. The buildings are noted for their beauty and elegant ornamentation, making Vienna, from the standpoint of architecture, one of the finest cities of the world.

Buildings and Monuments. In the center of the Innere Stadt is the Cathedral of Saint Stephen, which dates from the thirteenth century and is one of the finest Gothic structures in Europe. Other buildings of importance in and about the Ringstrasse are the imperial palace, in the southeastern quarter, noted for its age and size, rather than for its beauty; the townhall, a magnificent building adorned with many statues; the imperial museums of natural history and of art, with a monument of Maria Theresa between them; the houses of parliament; the palace of justice; the imperial opera house; a number of churches, noted for their statuary and paintings and the University of Vienna, with its numerous structures. Among the noted monuments not already mentioned are the monument to Mozart, the equestrian statues of Archduke Charles and Prince Eugene of Savoy and the monument to the Archduchess Christines.

Institutions. The educational institutions include the University of Vienna, a polytechnic institute, an agricultural college, a geological institute, the academy of sciences, the conservatory of music and the military geographical institute, besides a large number of trade schools, which prepare their students for such occupations as printing, bookbinding and other mechanic arts. The imperial library contains 900,000 volumes, besides a large number of manuscripts and engravings, and the library of the university has 650,000 volumes. These are supplemented by other libraries in the various institutions. The collections in the academy of art and the museums are among the best in the world, while the armory contains a large collection of weapons and other instruments of war. The chief charitable institution is the general hospital, one of the largest and most famous institutions of its kind in the world; before the war medical students were drawn to it from all over Europe and America. There are also an asylum of the insane, and a number of smaller hospitals and homes for the blind and the deaf and dumb.

Industries. Vienna is situated at the crossing of the great commercial routes from London, Berlin and Paris to Constantinople and from Petrograd to Rome. Its situation made it an important industrial and commercial center. Among the leading industries were the manufacture of silks, woolens and other textiles, clothing, machinery, railway cars, locomotives and supplies, musical instruments, furniture, scientific and surgical instruments, pottery, jewelry, leather goods, malt liquors and numerous other products. Before the war the city had an extensive trade with the surrounding country and with the leading commercial centers of Europe, but during the war this trade was almost entirely cut off.

History. Vienna occupies the site of an ancient Roman camp, known as Vindobona. It first became prominent as the capital of the duchy of Austria, and for about 150 years from the middle of the sixteenth century it was the capital of the German Empire. It was the seat of the celebrated Congress of Vienna that reorganized Europe after the fall of Napoleon. Population in 1911, 2,031,498; before the outbreak of the war in 1914 it was estimated at 2,149,800. See AUSTRIA; AUSTRIA-HUNGARY; WORLD WAR; VERSAILLES, TREATY OF.

VIENNA, CONGRESS OF, a convention of representatives of European powers which assembled late in 1814 to reorganize the political system of Europe after the close of the Napoleonic wars. It was a brilliant assemblage of crowned heads, prominent diplomats and statesmen, of whom Czar Alexander I of Russia, Prince Metternich, the Austrian Minister of State, Prince Talleyrand of France, Castlereagh and Wellington of Great Britain and Hardenberg and Humboldt of Prussia were among the most powerful.

By the provisions of the Congress of Vienna, France was deprived of the territory conquered by Napoleon; Holland and Belgium were united into a single kingdom under the House of Orange; Norway and Sweden were joined under a single ruler, one of Napoleon's generals, and the independence and neutrality of Switzerland were guaranteed. The German states were loosely confederated under a diet at Frankfort. In Italy the old governments, consolidated under Napoleon, were restored. Poland was reëstablished as a constitutional kingdom dependent upon Russia. Great Britain found compensation in the extension of its colonial possessions.

The Congress of Vienna is criticized for its blindness to the spirit of nationalism that had been awakened throughout Europe by the events of the French Revolution. It defined boundaries arbitrarily, without consulting the peoples concerned, thus laying the basis of many disputes and future wars. The diplomatic method known as the balance of power, brought into prominence by this Congress, led to unending international complications that finally resulted in the bursting forth, in 1914, of the World War, the most widespread and violent conflict in all history.

VI'KINGS. See NORTHMEN.

VILLA, *veel' ya,* FRANCISCO, or PANCHO (1877–), a Mexican revolutionist and bandit, born at Las Nieves. His real name is DOROTEO ARANGO; he called himself *Villa* after joining the Madero revolution. He had no education, and became a bandit and outlaw at a early age; long before the Madero uprising President Diaz had offered a reward for his capture. In 1914 he joined Carranza in a revolution against Huerta, and the next year he started a revolution against Carranza, gaining control of parts of the states of Sonora, Chihuahua and Sinaloa.

In March, 1916, Villa invaded New Mexico, and raided the town of Columbus. United States troops under Pershing made an expedition of 500 miles into Mexico to capture Villa, but he fled to the mountains and escaped. After the troops were withdrawn, in 1917, he resumed his depredations, but did not invade the United States again during the period of the World War. In the summer of 1919, however, his attitude became very threatening, and an American patrol crossed the border and broke up a fight between a band of Villistas and a Carranza force at Juarez, because flying bullets had caused casualties in El Paso, Texas. See MEXICO; UNITED STATES; CARRANZA.

VILLEINS, *vil' linz,* a class of feudal serfs, who were allowed to hold portions of land at the will of their lord, on condition of performing menial and non-military services. It frequently happened that lands held in villeinage descended in uninterrupted succession from father to son, until at length the occupiers or villeins became entitled, by prescription or custom, to hold their lands so long as they performed the required services. And although the villeins themselves acquired freedom, the villein services were still the condition of the tenure. These customs were preserved and evidenced by the rolls of the several courts in which they were entered, or by the immemorial usage of the several manors in which the lands lay. And as such tenants had nothing to show for their estates but the entries into those rolls, or copies of them, they at last came to be called *tenants by copy of court roll,* and their tenure was known as a *copy-hold.* See FEUDAL SYSTEM.

VIL'LI, minute projections covering the mucous lining of the small intestine. Each villus contains an artery, a vein, a capillary, or a network of capillaries, and lacteal. The function of the villi is to absorb the nutritious matter from the digested food in the intestines, after which the digested fats are carried to the thoracic duct, and the sugars, water, proteids and inorganic salts are carried by the portal vein to the liver. In constipation the villi are submerged by waste matter, and the absorption of food matter by them is made difficult or impossible.

VIL'NA, RUSSIA, a city of about 200,000 population, situated on the navigable Vilna River between Petrograd and Moscow. It is an old city, dating from the tenth century. Before the annexation of Lithuania by Russia in 1795, it was the capital of that country. It has long been an ecclesiastical and educational center. It is surrounded by an agricultural country and carries on commerce in grain and timber. In April, 1919, Vilna was seized from the Bolshevik forces by a Polish army. See LITHUANIA.

VINCENNES, *vin senz',* IND., one of the oldest towns in the United States, the county seat of Knox County, 117 miles southwest of Indianapolis, on the Wabash River and on the Vandalia, the Baltimore & Ohio Southwestern, the Cleveland, Cincinnati, Chicago &

Saint Louis, and the Chicago and Eastern Illinois roads. It is in an agricultural, lumbering and coal-mining region and has manufactures of flour, lumber and clay products, novelties, paper, stoves and farm and mining implements.

It is the seat of the Vincennes University, Saint Rose Female College, a cathedral library and a public library. Other interesting features are the house in which William Henry Harrison lived when he was governor of the territory, the old legislative house, the courthouse, the city hall, the first in Indiana, the Federal building, the Y. M. C. A. building, the Vincennes Sanatorium, Harrison Park and several Indian mounds near the city.

Vincennes is located on the site of an ancient Indian village, called Chip-kaw-kay. The French erected a fort here about 1702, and a permanent settlement soon grew up. It was first called "The Post," but was later given its present name, in honor of its founder, François Morgan de Vinsenne. The place was taken by the British in 1763, was captured by Virginia troops under Colonel George Rogers Clark in 1779 and was turned over to the United States in 1783. It was the capital of Indiana Territory from 1801 to 1816 and was made a city in 1856. Population, 1910, 14,895; in 1917, 18,089 (Federal estimate).

VINCENT, George Edgar (1864–), an American educator and sociologist, son of Bishop John H. Vincent, born at Rockford, Ill. After his graduation from Yale University in 1885 he traveled in Europe and the Orient and then engaged for a time in journalistic and literary work. In 1888 he became vice-president of the Chautauqua system and in 1907 president of the Chautauqua Institution. At the same time he was a member of the faculty of the University of Chicago, having been appointed in 1894. In 1904 he was made professor of sociology; from 1900 to 1907 he was dean of the junior colleges, and from 1907 to 1911, dean of the faculties of arts, literature and science. In 1911 professor Vincent became president of the University of Minnesota, and in 1917 resigned from that post to accept the presidency of the Rockefeller Foundation (which see). He has written *Social Mind* and *Education* and, with A. W. Small, *An Introduction to the Study of Society.*

GEORGE E. VINCENT

VINCENT, *vin'sent,* John Heyl (1832–), a Methodist Episcopal bishop, best known as one of the founders of the Chautauqua Assembly movement. He was born at Tuscaloosa, Ala., and was educated at Lewisburg (Pa.) Academy and at Wesleyan Institute, Newark, N. J. Entering the New Jersey Conference in 1853, he preached four years in the East, and was then transferred to the Rock River Conference, in Northern Illinois. In 1865 he established the *Northwest Sunday-School Quarterly,* and the following year *The Sunday-School Teacher.* From 1868 to 1884 he was corresponding secretary of the Sunday-School Union of his denomination and editor of its publications. Ten years previous to the latter date he had helped to lay the foundations of Chautauqua Institution and in 1878 had become its chancellor. He was elected bishop in 1888, and twelve years later was appointed resident bishop in Europe, remaining abroad four years and then retiring from the active episcopate in 1904. His publications include *The Chautauqua Movement, The Church School and Its Officers, Studies in Young Life, A Study in Pedagogy* and *Family Worship for Every Day in the Year.* See Chautauqua Institution.

VINCI, *vin' che,* Leonardo da (1452-1519), one of the foremost scholars of the Italian Renaissance and one of the greatest artists of all time. His place in history is unique, not only because of the high quality of his art, but because of the versatility of his genius and his intellectual influence on his contemporaries. Such a combination of artistic and scientific capacities has not been known in any other man. Leonardo was distinguished not only as a painter, but as a sculptor, an architect, a musician and an engineer. As a philosopher and man of science he was the forerunner of Galileo, Bacon and Descartes. He was acknowledged the greatest physicist of the fifteenth century. He "united a remarkable knowledge of mathematics with the most admirable intuition of nature," and he "anticipated the grandest discoveries of modern science," says a modern scholar.

Leonardo was born at the small town of Vinci, near Florence, the son of a Florentine notary. In his youth he was distinguished for his great personal beauty, physical strength and eagerness for knowledge. After studies with the celebrated painter and sculptor Verrocchio he became an independent artist, and from the age of twenty onward enjoyed the most distinguished patronage; Lorenzo de' Medici, Ludovico the Duke of Milan and Francis I of France treated him with the highest honor. As architect, engineer, painter sculptor and decorator, he received numerous commissions, and in everything he undertook he aimed at perfection.

His supreme masterpiece, *The Last Supper,* painted on a wall of the monastery of Santa Maria delle Grazie, at Milan, represents Christ, seated with his disciples, at the dramatic instant following His announcement that one of the twelve should betray Him. In characterization and dramatic and spiritual significance it surpasses all other treatments of the same subject. Unfortunately, the picture has been exposed to dampness and smoke, and these elements, together with clumsy attempts to restore it, have obliterated much of its original beauty. The most celebrated of Leonardo's easel pictures, that known as *Mona Lisa,* is the portrait of a prominent Florentine lady, perhaps the most famous portrait in the world (see PAINTING). *The Virgin of the Rocks, The Virgin, Saint Anne and Christ* and *John the Baptist,* all in the Louvre, are his other chief masterpieces. Leonardo spent his last years in France in the service of Francis I. He wrote a celebrated treatise on painting.

VIN'EGAR, a sour liquid whose active principle is acetic acid, is made from the juices of fruits and vegetables and from almost any other liquid that will ferment. It is used as a condiment and in the pickling and preserving of foods. The vinegar of commerce is made from wine, cider or malt exposed to the air, usually at a heightened temperature until the alcohol which it contains turns into acetic acid. By far the largest part of the vinegar used in the United States is made from cider. Ohio, New York, Michigan and Missouri lead in the industry.

Cheap grades of vinegar are usually given their sour taste by the addition of sulphuric acid. This adulterated product is very unhealthful, and should not be purchased. The presence of the acid can be detected by boiling a mixture of vinegar and potato starch, and when this becomes cool, adding a small quantity of iodine. If the vinegar is pure, the mixture will turn blue on the addition of the iodine; if sulphuric acid is present, the color will remain unchanged.

VIN'LAND, the name given to that part of North America which was visited by Norsemen several centuries before Columbus made his famous voyage. As early as the tenth century a Norwegian viking, Bjarni Herjulfson, was driven by storms to the mainland near Greenland, and in the year 1000 Lief Ericson landed on the continent, probably somewhere between Delaware and Labrador. He named the region *Vinland* (also spelled *Vineland*) because of the numerous wild grapevines there. It is believed, however, that the Norsemen did settle at some point in America and that they built homes, which they deserted because of the hostility of Indians. The former popular belief that the old mill at Newport and the Dighton Rock are evidences of their visit has long since been discarded, the former having been erected by an early governor of Rhode Island and the latter being the work of Algonquin Indians.

VI'OL, a class of ancient musical instruments, which may be regarded as the precursors of the modern violins. They were fretted instruments, with three to six strings, and were played with a bow. There were three instruments in a set, differing in pitch; these were the treble, tenor and bass viols, and in concerts they were commonly played in pairs—two treble, two tenor and two bass. The bass viol, or *viol da gamba,* developed into the modern *violoncello.*

VI'OLET, the popular name given to a genus of plants, of which there are many species. They are favorite flowers in all northern and temperate climates, and many of them are among the first to make their appearance in the spring. The greatest favorites are the common sweet violet and the heart's-ease, the former being especially esteemed for its fragrance. The well-known pansies, so common as garden flowers, are but varieties of one species, produced by cultivation. In different localities, various species are called johnny-jump-ups. The so-called dog-tooth violet belongs to the lily family.

VIOLIN', a musical instrument, consisting of four catgut strings, the lowest of

which is covered with silvered copper wire, stretched, by means of a bridge, over a hollow wooden body, and played with a bow. It is considered the most perfect of musical instruments, on account of its capabilities of fine tone and expression and of producing all the tones in any scale in perfect tune. It forms, with the viola, the violoncello, or bass violin, and the double bass, the main element of all orchestras.

The principal parts of the violin are the *scroll,* or *head,* in which are placed the pins for tuning the strings; the *neck,* which connects the scroll with the body, and to which is attached the *fingerboard,* upon which the strings are stopped by the fingers of the left hand, as it holds the neck in playing; the *belly,* over which the strings are stretched, and which has two *f*-shaped sound holes, one on each side; the *back,* or under side; the *sides,* or *ribs,* uniting the back and belly; the *tailpiece,* to which the strings are fastened, and the *bridge.* The back, neck and sides are generally of sycamore, the belly of deal, the fingerboard and tailpiece of ebony. Almost all the pieces are put together with glue.

The four strings of the violin are tuned at G, on the upper space of the base staff, D, A, E, reckoning upward. Every intermediate semitone in a compass of 3½ octaves may be produced by stopping the strings with the fingers, and the compass may be almost indefinitely extended upward by touching the strings lightly. The *viola,* or tenor violin, has four strings, tuned to C (in the second space of the base staff), D, A, G, reckoning upward; it is an octave higher than the violoncello and a fifth lower than the violin.

The art of violin-making reached its highest development in the sixteenth, seventeenth and eighteenth centuries. The greatest of the world's violin makers, Stradivarius, Amati and Guarneri worked at Cremona, Italy. Very fine instruments were also made at the same time in France and Germany.

VIOLONCELLO, *vi o lon chel′lo,* also called CELLO *(chel′o),* a large musical instrument of the violin class, intermediate between the violin and the double bass. The performer rests one end of the instrument on the floor between his knees, and supports the neck with his left hand. There are four gut strings, the two lowest covered with silver wire. They are tuned in fifths—C, G, D, A. The instrument has a compass from C to $A_{\flat}$. The higher notes are in the treble clef, the lower in the bass. Although the instrument is much larger than the violin, the cello bow is shorter. Comparatively little solo music has been written for the cello.

VI′PER, the name applied to a family of venomous reptiles found in tropical and temperate regions of Europe, Asia and Africa. This snake has a flat, triangular head, which in most species is covered with scales. The pupil of the eye is like a cat's eye. The *common viper* is rarely more than two feet long, is usually brownish-yellow, with black triangular spots on its sides and zigzag lines on its back. Its bite, as a rule, is not fatal, but may cause pain and fever. It is the only poisonous snake in Great Britain. Another species, called the *sand viper,* having a small fleshy horn on its nose, is found along the shores of Mediterranean countries. In Africa occur the *death adder, puff adder* and *saw viper.* The *horned viper* of the Egyptian desert which preys at night and burrows in the sand during the day, is much feared on account of its bite, which is usually fatal. The largest and most deadly of all vipers is *Russell's viper* of India. It is five feet long, and its poison is invariably fatal.

VIRCHOW, *veer′Ko,* RUDOLF (1821–1902), a German physician and pathologist, born in Pomerania. He studied medicine at Berlin and early became famous as a lecturer on pathological anatomy at Berlin University. His advanced liberal opinions during the movement of 1848 induced the government to deprive him, temporarily, of his appointment. In 1849 he accepted a chair at Wurzburg, where he remained seven years, at the end of which time he returned to Berlin as professor in the university and director of the pathological institute attached to it. In 1858 he published *Cellular Pathology,* in which he showed that pathological tissues are a collection of cells. Virchow rendered immense service to medical science by his discoveries in regard to inflammation, ulceration, tuberculosis and other diseases, and he has had great influence on the whole of modern medicine, including hospital reform and sanitary science. He was a voluminous writer, not only on scientific, but also on political subjects, and many of his works have been translated into the English and other European languages.

VIR′EO, a common name of a small family of birds, whose plumage is generally of a

greenish shade. They are sometimes called greenlets, and about a dozen species are found in the United States. Many of the birds are singers, the songs of the several species varying considerably. The birds feed exclusively upon insects, and thus render a distinct service to the farmer. The nests of all are similar, being cup-shaped and constructed of ribbonlike materials.

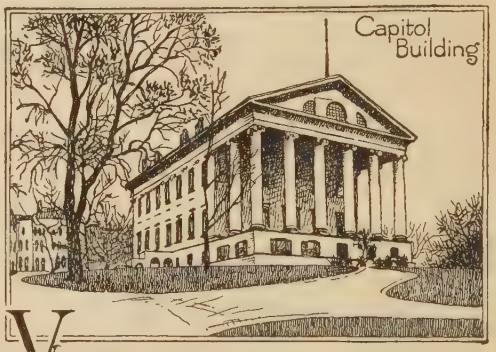
The best-known species in the United States is the *red-eyed vireo.* It is about six inches long, has bright olive-green back and tail, and a double line of ash and white over the eye, the iris of which is red. The *yellow-throated vireo* has a bright, olive-green back and yellow throat and breast. The *warbling vireo* is of plain plumage, but has a charming song.

VIRGIL, *vur'jil.* See VERGIL.

VIRGIN ISLANDS OF THE UNITED STATES, a group of islands purchased by the United States from Denmark in 1917 for $25,000,000. Before the change of ownership they were known as the DANISH WEST INDIES. Geographically the Virgin Islands are a part of the Leeward Islands, which, with the Windward Islands to the south of them, constitute the Lesser Antilles, stretching southward from Porto Rico in a great semicircle nearly to the coast of South America.

The Virgin Islands consist of three main islands—Saint Croix, Saint John and Saint Thomas—and about fifty smaller ones, only five of which are inhabited. The total population of the three larger islands is about 26,000, and the combined area is about 132 square miles. Saint Croix has an approximate area of eighty-four square miles and a population of 14,901. Saint Thomas is twenty-eight square miles in extent, and is inhabited by 10,191 persons; Saint John, with an area of twenty square miles, has 959 inhabitants. (The population statistics are from the official census report of 1917.) The great majority of the people are of negro or of mixed white and negro blood.

These islands are of volcanic and coral origin, and are of slight importance industrially, but because of their strategic value as outposts for the protection of the Panama Canal their purchase by the United States was highly approved by all Americans. The harbor of Charlotte Amalie, the chief town on Saint Thomas, is one of the best in the West Indies, and the town is an important calling station for vessels plying between Europe and the Americas, especially for those bound for the Panama Canal. Vessels not only may secure coal, oil and other supplies, but find in the harbor a safe refuge from storms. The Virgin Islands carry on a small import and export trade, sending to the United States sugar, hides and skins and cabinet woods. They receive coal, foodstuffs, boots and shoes, refined sugar and other commodities used in everyday life. See SAINT THOMAS; TRAVELS IN DISTANT LANDS, subhead, *Among the Lesser Antilles.*



VIRGINIA, *vur jin' e ah,* one of the thirteen original states of the American Union, belonging to the South Atlantic group. In colonial days it was referred to in official documents as the "Dominion of Virginia," a name that survives in its popular designation, the OLD DOMINION. Virginia is the picturesque name given the colony by Sir Walter Raleigh, who bestowed it in honor of Elizabeth, the "Virgin Queen" of England. As colony and state Virginia has had a unique and honored place in American history. On its soil in 1607 was planted the first permanent English settlement in the New World. A leader in the struggle for independence, it gave the American nation its first President and seven others, besides Patrick Henry, John Marshall, Richard Henry Lee, John Randolph and other distinguished orators and statesmen. Virginia's honorary title, "Mother of Presidents," is well deserved.

Location and Area. The state is the most northerly of the South Atlantic group. It has the shape of an irregular triangle, with the apex pointing northward, and Tennessee and North Carolina lying along the base, on the south. The sloping western boundary lies adjacent to West Virginia and Kentucky;

Maryland is at the extreme north and along the northeast; Chesapeake Bay and the Atlantic Ocean bound the state on the east. With an area of 42,627 square miles, Virginia is the thirty-third commonwealth in the Union in size. Of its area, 2,365 square miles are water surface, as the state has numerous landlocked harbors and rivers. The states nearest it in size are Tennessee, with an area of 42,022 square miles, and Ohio, which covers 41,040 square miles.

People and Cities. In 1910 Virginia had 2,061,612 inhabitants and an average density of 51.2 persons to the square mile, and was twentieth in rank among the states in population. The population on July 1, 1918, according to Federal estimates, was 2,234,030.

About one-third of the people are of negro blood; the proportion of foreign-born to the total white population is about five per cent, and of the native-born population nine-tenths are Virginians by birth. Russians, Germans, English, Irish and Scotch are the most prominent of the foreign-born groups.

The principal religious bodies are the Baptist, Methodist, Presbyterian, Roman Catholic and Episcopalian.

Richmond, with an estimated population of 160,719 in 1918, is the capital and largest city. It is the only municipality with over 100,000 inhabitants. The cities next in size are Norfolk, Roanoke, Portsmouth, Lynchburg and Petersburg.

Surface and Drainage. There are six natural divisions of Virginia, which differ greatly in scenery, soil and productions. Named in their order, from east to west, they are the tidewater country, middle Virginia, the Piedmont section, the Blue Ridge, the valley and Appalachia. The tidewater country consists of lowlands, extending about 100 miles westward from the ocean; it is divided by Chesapeake Bay and deeply cut by smaller bays, estuaries and rivers. Middle Virginia, extending from the tidewater to the eastern outlying spur of the Appalachian system, is an undulating plain, increasing in elevation toward its western limits. The Piedmont section is a narrow belt, lying at the foot of the Blue Ridge. Its mountains and hills extend in every direction, enclosing picturesque valleys of every shape. The Blue Ridge, from three to twenty miles wide, broken by gorges and a series of beautiful peaks and expanding into an elevated plateau toward the south, is the principal range.

The highest peak is White Top (5,530 feet), near the Tennessee line. The valley, between the Blue Ridge and the Alleghanies, is the garden spot of the state. The limestone formations in the central part of this valley contain several noted caverns, besides the famous Natural Bridge, considered one of the wonders of the world. Appalachia, the westernmost section, is a mountainous region, crossed by numerous narrow ranges, inclosing troughlike valleys.

The Potomac, which forms a portion of the boundary between Virginia and Maryland, drains the northern and eastern parts of the state. Its chief tributaries from Virginia are the South Branch and the Shenandoah. The important streams flowing into Chesapeake Bay, from the north southward, in their order, are the Rappahannock, the York and the James. The Roanoke flows into the state near the central point of the southern boundary and proceeds eastward for a number of miles and then returns to North Carolina. This, with its tributaries, drains the south-central region. The southwestern part is drained into the Tennessee, and the northwestern, into the Ohio. The chief streams flowing through this region are the Big Sandy, which forms a part of the boundary between Virginia and Kentucky, and the Great Kanawha. Many of the mountain streams are characterized by deep gorges and beautiful waterfalls.

Climate. The climate is diversified according to the natural divisions of surface. In general, the state is free from intense heat and severe cold, although sudden changes are common in most localities. The mean annual temperature is 56°. The average annual rainfall is forty-four inches. The climate is healthful the year round.

Mineral Resources. Virginia has a wide variety of minerals, and the annual output of all products is valued at over $16,000,000. In the southwestern part, in the Appalachian region, there are valuable coal mines now yielding close to 10,000,000 tons a year. Coal is the most important of the minerals, and is followed by stone products, notably granite and other building stones, soapstone, marble and talc. Virginia is the first state in the production of soapstone. Clay products and lime are next in order of importance; among the former common brick constitutes about eighty per cent of the total product.

The state is among the first ten in the production of iron, and is first in the production of iron pyrite, used extensively in the manufacture of sulphuric acid. Other minerals of commercial value include salt, sand and gravel, copper, zinc and lead. There are numerous mineral springs distributed over the state, many of which are frequented as health resorts because of their medicinal properties. Hot Springs, seventy-five miles north of Roanoke, is one of the best known.

Agriculture. Agricultural pursuits occupy over half the population of the state, and agriculture is the leading industry. Climatic conditions are favorable in nearly all parts, and varieties of soil make possible a wide diversity of products. Along the eastern shore and in "Tidewater" Virginia there is a rich marl on which vegetables flourish, and there truck gardening is a highly profitable branch of agriculture. Peanuts are also raised in the east, as well as in a few other localities, and the yearly output is surpassed only by that of North Carolina. The great tobacco fields are in the central section, while the Piedmont region is famous for its orchards and grazing lands. In the fertile soil of the valley between the Blue Ridge and the Alleghanies abundant cereal harvests are produced.

In point of value and yield, corn is the most important of the large crops, and is followed by wheat, tobacco, hay and forage. In the output of tobacco Virginia is surpassed only by Kentucky and North Carolina; the annual crop is about 130,000,000 bales. Potatoes are the most important vegetable product, the yearly output averaging about 18,000,000 bushels. There is also a small cotton crop. Among orchard fruits, apples lead, while strawberries are the most valuable small fruit. Dairying and the raising of horses, mules, cattle, sheep and swine are profitable enterprises; the state is noted for its thoroughbred horses.

Fisheries. Virginia is one of the leading states in value of oyster fisheries, as the tidal waters contain immensely profitable beds of that mollusk; about two-thirds of the value of the entire fishery output is represented by the oyster catch. Other products of the fisheries include shad, menhaden, alewives, clams, crabs and bluefish.

Manufactures. The leading manufacturing enterprises are those connected with the making of lumber and lumber products. Second in importance is the manufacture of smoking and chewing tobacco. Richmond, which is the great center of this interest, has one of the largest tobacco factories in the United States. Flour milling, car construction and repair, leather tanning, the manufacture of fertilizer, paper making, the manufacture of cotton goods and of boots, shoes and the roasting of peanuts are other profitable lines of manufacture. Shipbuilding has developed extensively of late years, especially at Newport News, on Hampton Roads. Here is one of the largest shipyards in the country. Good water power, a wealth of raw materials and ready means of transportation are all favorable factors in the industrial growth of the state.

Transportation. There are over 4,700 miles of railroad in operation. Some of the main lines are the Chesapeake & Ohio, the Southern, the Norfolk & Western, the Baltimore & Ohio and the Atlantic Coast Line. Coastwise steamers run regularly between Virginia ports and New York, Philadelphia, Baltimore and Boston, and a line of freighters plies between Newport News and Liverpool. Hampton Roads, at the mouth of the James River, is one of the finest harbors along the Atlantic coast. There is a large interstate traffic, both by rail and water. The exports consist of tobacco and its manufactured products, lumber, grain, cotton, fruit, vegetables, coal, iron and naval stores, and the imports are manufactured goods and food products. Norfolk is the chief cotton shipping port, and Newport News the principal city for coal shipment.

Government. The legislature consists of a senate, which cannot exceed forty members or have less than thirty-three members, and a house of delegates of not less than ninety, or more than 100, members. The senators are elected for four years and the delegates for two. The executive department consists of a governor, a lieutenant-governor, a secretary of the commonwealth, an auditor, a treasurer, a superintendent of public instruction, an adjutant-general and commissioners of agriculture and insurance. The state courts consist of a supreme court of appeals, of five judges, chosen by the legislature for twelve years, and circuit courts, which are held in twenty-four judicial districts, each of which has a judge, elected by the legislature for eight years. Lower courts are established for cities and towns.

Education. The school system is under the control of a superintendent of public instruction, elected by the people, and a state board of education of eight members, which consists of the governor, the superintendent of public instruction, the attorney-general, three representatives of higher institutions, chosen by the legislature, and two superintendents chosen by this group of six. The revenue for school purposes is provided almost wholly by local and state taxation. Separate schools are maintained for colored and white children, and the law requires that each district must have at least five months' school during the year. Notwithstanding the difficulties under which Virginia labored after the Civil War, the schools of the state have made continual advancement.

The state maintains the University of Virginia, the Virginia Polytechnic Institute, the Virginia Military Institute, William and Mary College (the second oldest university in the United States), the Virginia Normal and Collegiate Institute, for men, at Petersburg, and a state female normal school, at Farmville. Normal courses for negroes are given in William and Mary College, and there are industrial schools for women at Harrisonburg and Fredericksburg. The University of Virginia, at Charlottesville, was founded by Thomas Jefferson; the military Institute, at Lexington, is called the "West Point of the South." Other institutions of higher learning include the following well-known schools:

Elizabeth College (for women) at Salem.
Hampton Normal and Agricultural Institute at Hampton (colored).
Hampden-Sidney College (for men) at Hampden-Sidney.
Hollins College (for women) at Hollins.
Martha Washington College (for women) at Abingdon.
Randolph-Macon College (for men) at Ashland.
Randolph-Macon Women's College at Lynchburg.
Richmond College (for men) at Westhampton.
Sweet Briar Institute (for women) at Sweet Briar.
Washington and Lee University (for men) at Lexington.
Westhampton College (for women) at Westhampton.

Institutions. The charitable and correctional institutions include the penitentiary at Richmond, the state farm at Lassister Post Office, the central hospital at Petersburg, southwestern hospital at Marion, the western hospital at Staunton, the Virginia epileptic colony and the Virginia colony for the feeble-minded at Madison Heights, the Catawba sanatorium, the Virginia school for the deaf and blind at Catawba, and the Virginia school for the colored deaf and blind at Newport News.

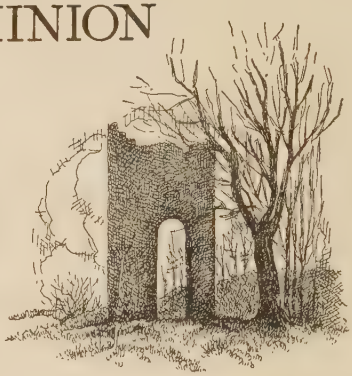
History. The shores of Virginia were probably first visited by Sebastian Cabot in 1498, but no attempt at settlement was made until late in the following century, when Sir Walter Raleigh sent out several expeditions without success. The London Company was formed in 1606, and in the following spring a colony was established at Jamestown. Its leading spirit was Captain John Smith, whose energy and ability saved the settlement from early destruction by famine and Indian attacks. In 1610 Lord Delaware was sent to the colony as governor, and under his wise administration the settlement prospered. The year 1619 witnessed the introduction of negro slavery by Dutch traders, as well as the establishment of the first representative assembly in America. From this time on many immigrants, driven from England by the persecution of the Puritans, arrived in Virginia; but at the outbreak of the Puritan revolution, in 1642, William Berkeley, a stanch royalist, became governor and promptly suppressed the rebellious spirit. At this time an influx of royalists also began, which led to serious opposition to the Cromwell régime in England and to the joyful recognition of the return of the Stuarts to the throne. However, within the next few years discontent with economic conditions and the policy of the administration led to a serious insurrection, known as Bacon's Rebellion.

The eighteenth century in Virginia was marked by remarkable development, especially in the westward districts of the colony. During the French and Indian Wars, Virginia took an exceptionally prominent part, but it was also a leader in the resistance to Parliamentary taxation, its Assembly passing some of the earliest and most important measures of the period. Virginia also furnished some of the most conspicuous figures of the time, such as Washington, Jefferson, Patrick Henry, the Lees and Madison. The state took a prominent part in the Revolution, and the war ended on Virginia soil, in the surrender of Cornwallis. During the early years of the Republic, the state was

VIRGINIA
THE OLD DOMINION

Houdon's Statue of Washington in the Capitol, Richmond

State Seal



All that is left of Old Jamestown

Population of Cities
★ Over 150,000
■ From 90,000 to 100,000
● " 30,000 " 50,000
▲ " 15,000 " 30,000

William and Mary College, Chartered in 1693

An Oyster Gatherer

Stratford, Westmoreland County, the Birthplace of Robert E. Lee

Jackson Monument, Richmond

Items of Interest on Virginia

The present state constitution was adopted in 1902.

The first white child born in the New World was born in Virginia.

The first exports of iron ore were sent from Virginia in 1608.

Twenty thousand pounds of tobacco were exported in 1619.

The first representative assembly in North America was the Virginia House of Burgesses, which met for the first time in 1619.

In 1648 the population of the colony was 15,000.

Seven states have been formed from territory which formerly belonged to Virginia.

During the Civil War, of the six great campaigns in the East, four were on Virginia soil; the first Manassas Campaign (1861), the Peninsular battles (1862), the second Manassas, Fredericksburg and Chancellorsville (1862–63), and the great Battles of the Wilderness and campaigns around Petersburg (1864–65).

Questions on Virginia

What is the area of Virginia?

Name and describe the physical divisions.

Describe the drainage.

What is the character of the coast line?

What is the most valuable product of the fisheries?

How does Virginia rank as a tobacco-growing state?

Name four other important crops.

What is the most valuable mineral product?

Name two minerals in which Virginia leads all other states.

What are the leading manufactured products?

How many miles of railroad are there in the state?

What natural advantages has Richmond? What are its leading industries? What buildings of historical interest still stand in Richmond?

Name five prominent educational institutions.

stanchly Anti-Federalist, but eight of the first nine Presidents were Virginians.

The state was at first favorable to the liberation of the slaves, but under the influence of states' rights theories and of agricultural conditions, it finally adhered to the policies of the lower South, and in the Civil War Virginia not only furnished the ablest generals in the Confederate armies, but became the battle ground of the great struggle. The state at first opposed secession, but finally passed the resolution, April 17, and from that time forward it was a continuous fighting ground between the two armies, many of the most important actions of the war, including Lee's surrender at Appomattox, taking place within its borders. A new constitution, framed in 1863, was adopted, but an amendment allowing negro suffrage was rejected in 1868, and the state was not readmitted until 1870. In 1902 a constitutional provision was adopted, limiting suffrage. Since the Civil War the state has been almost continuously Democratic in both state and national politics. Statewide prohibition became effective in 1916.

Related Articles. Consult the following titles for additional information:

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Bull Run, Battles of
Chancellorsville, Battle of
Fredericksburg, Battle of
Harper's Ferry
Jamestown
Revolutionary War in America
Smith, John
West Virginia, subhead History

RIVERS

James
Potomac
Rappahannock
Roanoke
Shenandoah

TOPOGRAPHIC FEATURES

Alleghany Mountains
Blue Ridge
Luray Caverns
Natural Bridge
Piedmont Region

VIRGINIA, MINN., a mining and lumbering city, fifth in size in the state, in Saint Louis County, seventy-five miles northwest of Duluth, and on the Great Northern, the Duluth & Iron Range, the Duluth, Winnipeg & Pacific, and the Missabe & Northern railroads. It is the distributing point for ores from the Vermilion and Mesaba ranges, one of the most important iron-producing regions of the world. Its saw mills turn out a million feet of finished white pine lumber daily. An extensive dairy industry is developing. The town was settled in 1892

and became a city in 1905. It has been twice burned by forest fires. There are a Federal building, a public library, a county courthouse and two parks. The workmen of the mills and mines are largely of European birth. Population, 1910, 10,473; in 1917, 15,954.

VIRGINIA, UNIVERSITY OF, a state institution of higher learning, located near Charlottesville, four miles from Monticello, the old home of Thomas Jefferson. The university was founded by the state of Virginia through the influence of Jefferson, in 1819, and it owes much of its efficiency to his interest and care. In October, 1903, the government board created the office of president, and in June, 1904, Edwin Anderson Alderman was elected first president of the university. The institution is organized into academic, engineering, law, medical and agricultural departments. There are about seventy-five instructors and over 900 students, and the library contains 100,000 volumes. The state of Virginia makes an annual appropriation for the maintenance of the university. Among the interesting buildings is the Rotunda, housing the library. The structure is modeled upon the Pantheon at Rome.

VIRGINIA CITY, NEV., third city in size in the state, the county seat of Storey County, fifty-two miles southeast of Reno, on the Virginia & Truckee railroad. The city grew up about the famous Comstock lode, the world's richest silver mine, discovered in 1859, and since that time having a consolidated output amounting to approximately a billion dollars. The settlement was first known as Ophir and later as Silver City. It received its present name from James Fenimore, an early settler, familiarly known as "Old Virginia." The city was incorporated in 1864. The population in 1880 was 10,917, the subsequent decrease being largely due to exhaustion of the lode and a decline in the price of silver. Population, 1910, 2,244.

VIRGINIA CREEPER, a shrubby, hardy climbing plant of the grape family. It is much grown on walls on the continent of Europe, in the British Isles and in America as an ornamental vine. The stem develops tiny rootlets along its entire length, and by means of these the vines, which often attain a great size and weight are upheld. The foliage is compound, five leaflets to a stem, and in autumn is brilliantly colored. The wild Virginia creeper is sometimes mistaken for poison ivy, though the latter has three leaflets on a stem. Because of the little bunches of dark blue berries which appear in the fall the creeper is sometimes called *false grape.*

VIRGINIA RESOLUTIONS. See KENTUCKY AND VIRGINIA RESOLUTIONS.

VIRGO, *vur'go* (the virgin), the sixth sign of the zodiac, represented by the sign ♍. The principal star of this constellation is Spica, one of the lesser first-magnitude stars. The sun enters the constellation of Virgo about August 20th.

VI'RUS. As the term is used in medicine, *virus* means disease poison, particularly the poison by which disease is conveyed from one person to another by contact. Formerly the application of the term was restricted to such diseases as measles, scarlet fever and smallpox, but the culture of any bacteria may be called a virus. The term is also applied to the vaccine used in vaccination.

Related Articles. Consult the following titles for additional information:

Antitoxin	Medicine
Bacteria	Vaccination
Germ Theory	Vaccine Therapy

VISCOUNT, *vi'kount,* originally, in English usage, the officer who acted as deputy to a count or earl. As a hereditary title, it was first granted to John Beaumont, in 1440. A viscount is "Right Honorable" and is styled "My Lord." His wife is a *viscountess,* and his children are addressed as "Honorable."

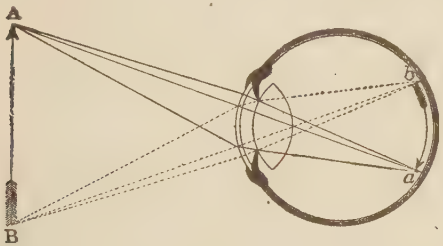
VISHNU, the second of the three great Hindu gods, by his special worshipers considered to be the greatest. In the early Vedas he was not regarded as the most exalted deity, but this rank was accorded to him by the later writers. The myths relating to Vishnu are characterized by the idea that whenever a great physical or moral disorder affected the world, Vishnu descended to set it right. He is generally represented as having four hands, in which he holds a conch-shell, blown in battle; a disk, the symbol of supreme power; a mace, the emblem of punishment, and a lotus, the sign of the creative power. Often he is shown as riding on a being, half man and half bird. See BRAHMA; SIVA.

VISIBLE SPEECH, a term applied by Prof. A. Melville Bell, its inventor, to a system of aphabetical characters, designed to represent every possible articulate utterance of the organs of speech. The system is based

or an exhaustive classification of the possible actions of the speech organs, each organ and every mode of action having its appropriate symbol. It is said that this invention is of great utility in teaching the deaf and dumb to comprehend spoken words and in aiding students of foreign languages to acquire their pronunciation from books.

VISIGOTHS, *viz' e goths.* See GOTHS.

VISION, *vizh' un*, or **SIGHT**, the act of perceiving objects through the eye. As an optical instrument, the eye closely resembles a camera, the cornea and crystalline lens



corresponding to the lens of a camera, and the retina corresponding to the screen. The rods and cones of the retina are sensitive only to the light, and their great number and variety enables the perfect eye to respond to light waves producing all colors. Rays of light entering the eye through the pupil are refracted, and they cross just back of the lens, the rays from *A* coming to a focus on the retina at *a*, and those at *B* coming to a focus at *b*, thus forming an inverted image on the retina. This may be observed by carefully cutting away the sclerotic coat from around the optic nerve of an eye taken from one of the lower animals, exposing the retina over an area about the size of a dime, and holding the eye towards a lighted lamp in a darkened room. An image of the lamp inverted on the retina can be plainly seen.

Physiology of Vision. Though the image may fall on the retina of a dead eye, there can be no vision in such case, as vision must depend upon the action of the living optic nerve.

The sensory fibers of the optic nerve originate in the optic centers of the brain. These fibers meet and cross at the base of the brain, forming the *optic commissure*, from which the optic nerves extend to each eye. In the commissure, half of the fibers cross, so that each optic nerve consists of half of the fibers from its own optic center and half of the fibers from the optic center on the opposite side of the brain. On reaching the eye, these fibers are so distributed that those from the right optic center form the right half of the retina in each eye, and those from the left center form the left half. When the rods and cones are stimulated, impulses are transmitted along the optic nerves and optic tracks to the centers of unconscious sight in the brain. From these centers, other nerves extend to the centers of vision, and when the stimuli are strong enough to cause impulses to be transmitted to these centers, the person becomes conscious of them and sees the object. This is completed vision, and the image is retained in memory for a greater or less length of time, depending upon the strength of the stimuli and mental condition at the time the vision occurs. Consciousness and memory are mental activities, so that complete, intelligent vision depends upon mental, as well as physical action.

Related Articles. Consult the following titles for additional information:

Camera	Eye	Light
Color	Lens	Memory

VIS'TULA, a river of Central Europe, rising in Eastern Silesia and flowing in a general northeasterly direction into the Frisches Haff and the Baltic Sea. Its delta encloses numbers of wooded islands, and its arms are subject to extensive change in their banks and the volume of their discharge. Among the cities on its banks are Cracow, Warsaw and Danzig. The river is about 630 miles in length and is navigable for a considerable part of this distance, though navigation is made difficult by constantly shifting sandbanks.

VI'TAL STATIS'TICS. See POPULATION, subhead *Vital Statistics.*

VITAMINES, *vi tam'inz*, a term derived from the Latin word for *life*, and applied to certain substances found in minute quantities in natural foodstuffs. They are believed to occur in the outer coat of rice and other grains, in uncooked milk, in butter and yeast and in fresh fruits and vegetables. Our knowledge of them is limited, but it is evident that they promote growth and help to regulate the body processes. Scientists are making extended investigations to discover the chemical formula of vitamines, and their exact relation to health and nutrition.

VIT'RIOL, OIL OF, the common name given to strong sulphuric acid. See SULPHURIC ACID.

VIVISECTION, *viv i sek'shun*, physiological investigation on living animals for the

purpose of discovering or demonstrating some fact of physiology. The term, which literally means *the cutting of the living,* was formerly employed to designate only cutting operations upon living animals for purposes of experiment. To-day it has a broader application and includes the inoculating with disease germs, experimenting with drugs, medicines, foods, with the effects of temperature upon living organisms, as well as cutting operations involving nerves, arteries and vital organs.

Vivisection has been generally regarded as the necessary means of acquiring physiological knowledge. Practically our entire knowledge of bacteriology and of the effects of drugs and medicines has been gained through this method of investigation, and nearly every operation and appliance to relieve pain or save life has been made possible through it. The facts concerning the circulation of the blood, respiration, digestion and the functions of the nervous system have been discovered by means of vivisection. The experiments are conducted in the most humane manner possible. The animals to be operated upon are placed under the influence of anaesthetics and suffer little or no pain. If an experiment necessitates the mutilation of the subject, the animal is put to death while it is still insensible.

VIZIER, *viz'yer,* a high official in Mohammedan countries, particularly the prime minister to the sultan, known as the grand vizier and possessing powers second only to the ruler himself.

VLADIVOSTOK, *vlah dye vohs tohk',* SIBERIA, the chief commercial and naval port of the country on the Pacific, the eastern terminus of the Trans-Siberian Railway. The city lies at the southern end of a peninsula, on an arm of the Sea of Japan. It has a fine harbor, ice-free nine months of the year, and is connected by steamship lines with Japanese, Korean, North Siberian and North American ports. The city is impressive in appearance when viewed from the magnificent bay, but on closer inspection is disappointing. During the World War great quantities of war supplies were deposited at Vladivostok, and after the Bolsheviki overthrew the government in Russia the allies landed troops in the city to guard the supplies and maintain order. Vice was rampant in the troubled days of the war. Population, 1911, 91,464. See SIBERIA.

VOCA'TIONAL EDUCATION, that type of education designed to prepare young people for their life work. As the term is ordinarily used, it applies to education below college grade, but in its broadest sense it should include preparation for professions as well as occupations. Since the beginning of the present century, vocational education has made rapid progress everywhere in Europe and America.

When the United States entered the World War in 1917, the government at once discovered the dearth of skilled workmen in all the trades in which increased activity became at once a vital necessity. Especially was there a scarcity of mechanics, carpenters and shipbuilders, and to supply the demand, the government entered upon a campaign of industrial training on a scale never before undertaken. This campaign was conducted by the committee on Education and Special Training of the War Department. Colleges, technical schools and high schools followed the lead of this committee, and the progress in vocational education in the two years following the declaration of war exceeded that during the ten years preceding that date.

The labor conditions confronting the government led to a thorough study, on the part of educators, of the relation of the schools to this condition. Some of the most far-reaching causes of the lack of skilled workmen were found to be, first, dropping the old apprentice system without providing anything to take its place, and the rise of the factory system, involving the extensive use of machines which do not require skilled operatives; second, lack of education. Only one-fourth of the pupils who enter the primary grades of the public schools complete the work of the eighth grade, and nearly one-half of them leave school before they reach the seventh grade. Most of these boys and girls go to work with practically no foundation for mental development, and only a few of them become skilled workmen in any occupation requiring a trained mind.

A majority of these pupils leave school because they find no interest in the subjects presented in the course of study and because their parents are unable to realize the importance to their children's success, of at least, an elementary education, whatever occupation they may follow. If the course of study could be so changed as to relate it more vitally to the occupations of life, it is agreed that

most of these pupils could be retained in school. Under the leadership of the United States Bureau of Education, the leading educators made such revisions of the courses of study as enabled them to provide more liberally for vocational subjects and vocational guidance.

Vocational Guidance. Vocational guidance is the first step in vocational education. For lack of it at the proper time, many boys and girls become misfits for life. By vocational guidance is meant that friendly interest in and oversight of boys and girls that will keep them in school, hold up to them ideals worth following, and lead them to have a definite purpose in life. This oversight should be given by both parents and teachers, and should always be kindly and sympathetic. Its ultimate aim should be to lead boys and girls to choose their life work deliberately, and to make such choice as will harmonize with their respective desires and aptitudes and lead to a successful career. Proper vocational guidance does not force boys and girls to choose occupations before they are old enough to know what they want to do. On the contrary, it strives to prevent them from making choice hastily.

Vocational guidance is especially helpful to boys and girls between twelve and sixteen years of age. It should help them "to a better understanding of their own abilities, of the opportunities afforded to do the world's work and of the best possible use to be made of such abilities and opportunities." Between fourteen and sixteen years of age, both boys and girls leave school in large numbers. A wise vocational counselor may influence many of them to remain in school for one or two years more. But he should follow with equal care those who go into the various lines of industry. These young people should be encouraged to continue their education while at work, and all possible assistance should be given them.

The competent vocational counselor also keeps in touch with the employer. While noting the industry and the efficiency of these young people, he likewise notices the conditions under which they work, and whether or not the occupation in which each is engaged is suited to the worker's strength and aptitude. When one is found working amidst undesirable surroundings or at an occupation for which he is in no wise fitted, a change is recommended. On the other hand, boys and girls should be encouraged to give the occupations they have respectively entered upon a fair trial, to put their best efforts into their work and to learn all they can about the business or trade in which they are engaged.

Pre-Vocational Education. Pre-vocational training is designed to assist young people who have not chosen a vocation in making such a choice. In large cities where there are schools equipped for carrying on various lines of industry the pupils are given opportunity to try out different vocations. But in addition to this, instruction is given upon the advantages, possibilities and disadvantages of each occupation, so each pupil may have a fair understanding of the relative position in the world's industry which the vocation he chooses holds. The bearing of the different branches in the course of study upon the various occupations should also be explained, and courses of reading should be suggested. The Junior High School is an important aid in this phase of the vocational education (see HIGH SCHOOL, subhead *Junior High School*).

Vocational Schools. About eighty-five per cent of the pupils trained in the public schools earn their living through industrial processes, and vocational schools are designed to fit young people for useful occupations. They differ from the old style manual training school in training their pupils specifically to enter upon some occupation, while the instruction in the manual training school is more for the purpose of training the hand for the cultural value derived from such training.

Vocational schools are elementary in character, but they do not receive pupils under fourteen years of age. The courses are usually two years in length; a few schools have three-year courses. In most of the schools the time is about equally divided between book-work and shop-work. The school work includes English, mechanical drawing, mathematics and other closely-related subjects. The shop-work is taught by practical men. Many evening schools are largely vocational.

Continuation Schools. There is an increasing demand for better educated workmen in all lines of industry. Many boys and girls and men and women have entered upon their chosen vocations with less than a com-

mon school education, and the purpose of continuation schools is to enable these people to continue their school work while following their occupations. Students in these schools may pursue lines of work that will perfect them in some special industry, or they may continue their general education. Evening schools may be considered a branch of continuation schools. The most successful schools of this type are those where arrangements are made with the employer by which the student is allowed to spend a part of the day at work and the remainder at school. In some schools the students are allowed credit for this outside work. Schools operating on this plan are sometimes called *coöperative* schools.

Technical High Schools. Technical high schools have become a feature in the school systems of most large cities. Such schools aim to prepare trained workers for leadership in the industrial world, for positions of higher rank than those of skilled mechanics. Cleveland and Chicago took the lead in introducing industrial courses in high school work, and these and other cities have such special schools.

The textile industry in the United States supports a number of schools which are closely allied to the high schools. Prominent among these are the Textile School of the Pennsylvania Museum at Philadelphia, and three schools in Massachusetts, at Fall River, New Bedford and Lowell, all three cities being great cloth manufacturing centers. These schools, which are partly supported by the state, turn out mature students able to fill important positions in the textile mills. Secondary schools, such as the Lewis Institute at Chicago, the Drexel Institute at Philadelphia, and the Pratt Institute at Brooklyn, now offer similar courses of training.

Trade Schools. Trade schools have been developed to take the place of the apprenticeship system. The first important one in the United States, the New York Trade School, was founded in 1881, and was intended primarily for the mechanics in the building trades. A number of other important schools were established in the next thirty years, but not until 1910 was there a notable increase in the number of trade schools. Many of the schools, like the Baron de Hirsch School in New York, are privately endowed. In Chicago, Milwaukee, Philadelphia, Indianapolis, Worcester and Portland, Oregon, are trade schools supported wholly or in part by the municipality.

United States Aid. The most important factor in promoting vocational education in the United States is the Smith-Hughes Act, which became effective in February, 1917. This law is explained under HIGH SCHOOL (which see). The passage of this bill, for which the National Society for the Promotion of Industrial Education had labored for ten years, marked the beginning of a new educational policy, in granting Federal aid to schools below collegiate grade which are not state institutions. This act supplements the Morrill Act, which provided for the state agricultural colleges and experiment stations, and it makes provision for the training of a large group of the population that cannot be reached directly by the Federal government. The provision of the act requiring the state governments to coöperate with the Federal government in order to derive any benefit from the appropriation places vocational education on a permanent basis in every state.

Aid to Soldiers. In June, 1918, Congress passed a law providing for the vocational education of disabled soldiers and sailors on their return to civil life. The responsibility for this training is placed with the Federal Board of Vocational Education, and the plan provides for the coöperation of the War and Navy departments, the Bureau of War Risk Insurance and the labor exchanges in the Department of Labor. The scope of the work includes completion of the training for such occupation as the soldier may choose and placing him in industry.

Another important phase of vocational education among the soldiers is the Students' Army Training Corps. The aim of this corps is "to train officer-candidates and technical experts of all kinds to meet the needs of the service." Soon after the organization of this work it was placed in operation in over 550 colleges, universities, professional, technical and trade schools of the country. The corps was divided into two sections—collegiate, or section A, and vocational, or section B. The work in section B dealt largely with the difficulty confronting the government at the beginning of the war, and stated in the opening paragraph of this article. In order to accomplish the work necessary within a given time, the soldiers were assigned to the various schools and colleges of the coun-

try, where they remained under military discipline and were given industrial instruction, including shop practice for periods of two months each, one unit following another until the training was completed.

Effect Upon the Educational System. The work of the section B units of the Students' Army Training Corps is considered to have been the most significant experiment in vocational education undertaken under a democratic form of government, and the influence upon the American educational system has been far-reaching. The results derived from these short courses have demonstrated beyond doubt the futility of short and incomplete courses and shop periods. It is necessary for the student to devote enough time to vocational training to work out the processes completely. This experiment also demonstrated the necessity of a more general development of the continuation school and upon a much larger scale than has yet been contemplated.

Another fact learned from the recent study of vocational education is that laws relating to general education, laws relating to vocational education and laws relating to child labor are not coördinated. Until such coördination is made in both state and national laws, the most efficient work in education cannot be done.

VOD'KA, an alcoholic liquor in concentrated form distilled from rye, potatoes or barley and widely in use by the peasants in Russia previous to its prohibition by edict of the czar, early in the World War. This edict was followed by increased military efficiency and comparative prosperity among the peasants. The sobering up of the millions who had been formerly brutalized by drink was a potent cause in bringing about the revolution of March, 1917. During the revolution, great stores of liquor in the cellars of the nobility were destroyed. See Russia.

VOICE, *vois,* sound emitted by the vocal cords of persons and animals, by means of which they communicate to one another their thoughts or emotions. The organ of the voice is the larynx, a cartilaginous box at the top of the trachea, or windpipe, capable of more delicate adjustment than any musical instrument. Across its top are stretched highly-sensitive and delicate mucous membranes, the edges of which are specialized to form the vocal cords. Sound is produced by a blast of air forced from the lungs upward through the glottis, or opening between the cords.

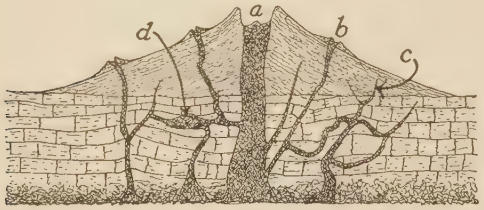
The pitch of the voice depends upon the tension of the vocal cords; the greater the tension, the higher the note produced. During the emission of acute sounds, the glottis contracts to a mere line. A deep rumbling sound is made by relaxed cords. The strength or loudness of the voice depends on the energy of the expiratory blast. Its quality depends upon the form and thickness of the cords, and is modified by the varying position of tongue, teeth and lips.

In the speaking voice, the notes have nearly all the same pitch, variety being mainly achieved through articulation in the mouth. The musical voice makes use of a larger number of notes, and their vibrations correspond to the notes of the musical scale. In singing, the vocal cords are under greater tension than in speaking. The principal difference between male and female voices lies in their pitch. The female vocal cords are shorter than those of the male, therefore their pitch is correspondingly higher. The male singing voice is classed as tenor, or bass, according to quality, and the female as soprano or contralto. The combined range of both covers about four octaves. A boy's voice is alto or soprano, because the vocal cords are no longer than those of the female. Change of voice in the adolescent boy, when the voice cracks or breaks, is due to rapid change in the larynx and temporary imperfect muscular control. See Larynx.

VO' LAPUK, an artificial language invented by Johann Martin Schleyer, a German priest, and published by him in 1879. It was intended for use as an international language, but the hope of its friends has never been realized. Volapük is extremely simple and regular in construction, and the orthography is entirely phonetic, the words being pronounced as they are written. The root words are derived from all the languages of Europe. Volapük at first attracted many students, and international congresses were held in 1884, 1887 and 1889. Disagreements among its adherents regarding reforms in the language retarded the movement and ultimately led to the development of new and rival systems. See Esperanto.

VOLCANO, *vol ka'no,* a mountain that has one or more openings through which heated matter is thrown from the interior. The

parts of a volcano are shown in the illustration below. The base comprises the walls and often blends with the cone so completely that no line of separation can be discovered. The term *cone* is usually applied to the upper



VOLCANO

(a) Crater; (b) Extinct crater; (c) Crevice; (d) Steam cavity.

and more recently formed portion of the volcano. In its summit is the opening called the *crater*. Leading from the crater down into the interior of the mountain is the *vent*, or *chimney*.

The form of the volcano depends quite largely upon the material thrown out. If this is ashes or thick viscid lava, that does not flow rapidly, the slopes of the mountain are steep and may be quite regular, as in the case of Vesuvius, Etna and many of the volcanoes of the Andes. If the material is of molten lava, that flows freely, a low, flat mountain, with gentle slopes, is formed. The volcanoes of Hawaii are the best illustrations of this type. In these volcanoes the flow of lava seldom takes place through an opening at the summit, but an outlet is forced through one or more crevices in the sides of the mountain. The crater is large and shallow and contains numerous vents, surrounded by small cones. Between these may also be found pools of molten lava.

In size, volcanoes vary from low mountains, comparatively small, like those in the vicinity of the Mediterranean, to great peaks, whose summits are from 17,000 to 20,000 feet above the sea, as is seen in the volcanoes of the Andes and the highest peaks of the Rocky Mountains, which are extinct volcanoes.

Volcanoes are classified as active, dormant and extinct. *Active* volcanoes are those either in continuous or frequent action. *Dormant* volcanoes are those which are active only at long intervals, and *extinct* volcanoes are those which have ceased action altogether. There is, however, no absolute division, as a volcano may pass from one class into another without warning, that is, a dormant or extinct volcano may become active, and an active volcano may become extinct.

Eruptions. The nature of the eruption is determined by the character of the material thrown out, and its violence is usually proportional to the length of time the mountain has been quiet. Volcanoes accustomed to throw out molten lava seldom eject ashes in large quantities. At the beginning, the lava flows rapidly, but as it cools it crusts over and flows more and more slowly until its motion ceases. The flow destroys everything in the path of the fiery stream, and the eruption often causes great devastation, suffering and loss of life. Some eruptions are characterized only by solid matter and steam. The solid matter is in the form of masses of rock, gravel, sand and dust, or ashes. These rise to a great height and are often carried through the atmosphere for many miles.

The causes of volcanic action are not well understood; but the chief cause is generally believed to be the contact of water with highly heated portions of the earth's interior. The violence of the action is supposed to be due to the expansive force of steam that has suddenly been released from great pressure. The steam forces out the ashes. The flow of lava is probably caused by its being squeezed into the fissure by the movements of the earth's crust. Some geologists believe that there are lakes of molten rock in various places in the interior of the earth, and that these are subject to tides like those on the ocean. They reason that the increased pressure caused by these tides may now and then force an opening in the earth's crust through which the heated matter is thrown out. An eruption is usually preceded by an increase in temperature of the land at the base and on the sides of the mountain, the drying up of springs and wells and frequently by local earthquakes. The most disastrous eruptions, as affecting loss of life, were the eruption of Vesuvius, A. D. 79; Krakatoa, in 1883, and Mont Pelee, on the island of Martinique, in 1902. At this eruption over thirty thousand people lost their lives within a few hours. The eruption of Mount Etna in 1911 was also very disastrous.

Related Articles. Consult the following titles for additional information:

Aconcagua	Herculaneum	Mauna Loa
Ararat	Hood, Mount	Mountain
Cotopaxi	Kilimanjaro	Pompeii
Earthquake	Lava	Popocatepetl
Etna	Martinique	Rainier, Mount
Fujiyama	Mauna Kea	Vesuvius

VOLE, an English name applied to several species of the rat family. The voles are widely distributed, being found in Europe,

FIELD VOLE

Africa, Asia and in North and South America. The *water* vole is about the same size as the brown rat, and it is often called a rat. It has dark brown or black fur, a tail about half the length of the body, and very strong hind feet, with five rounded pads on the lower surfaces. It burrows by the banks of streams and feeds for the most part on vegetable food. The *field vole,* or *short-tailed field mouse,* is about the size of a common mouse, but the body is stouter and the tail shorter. It has brownish-gray fur; its hind feet have six pads. It lives in fields and woods, feeds on vegetable food, is very prolific and often does much damage to grain and other crops. The *bank vole* is like the field vole, but it has a rusty-colored back, larger ears and a longer tail.

VOL'GA, a river of Russia, the largest in Europe. It rises near the Valdai Hills, in the northwestern part of Russia, and flows in a circuitous course eastward and then southward, entering the Caspian Sea through a broad delta, a few miles below Astrakhan. The length of the river is about 2,200 miles, and it is navigable for nearly its entire course. The chief tributaries from the north and east are the Oka, the Sura and the Sarpa, and from the west, the Tvertsa, the Mologa, the Sheksna, the Kostroma, the Vetluga, the Kama and the Samara. The width of the river varies from 420 feet to 700 feet and exceeds even 2,400 feet, at Nijni Novgorod. During the spring it sometimes overflows, when its width varies from one and one-fourth miles to three miles. By means of canals the Volga is connected with the Black, the Baltic and the White seas, and with other important navigable rivers, so that it constitutes one of the most important inland waterways of Europe. With its tributaries it traverses a region inhabited by 50,000,000 people.

VOLT, the unit employed in measuring electric pressure, such a pressure as will produce a flow of one ampere per second against a resistance of one ohm.

VOLTA, *vohl' ta,* ALESSANDRO (1745–1827), an Italian scientist, famous for his researches and discoveries in physics and as the inventor of the voltaic battery, named after him. He was born at Como, Italy, where, in 1774, he became professor of physics in the Royal School. He previously made important investigations and discoveries in chemistry and physics, especially in electricity. In 1779 he became professor of physics in the University of Pavia, and remained there twenty-five years. He invented the electroscope, the electrical condenser, the voltaic pile and the voltaic cell, or battery. See ELECTRIC BATTERY.

VOLTA'IC CELL, or **VOLTAIC BATTERY.** See ELECTRIC BATTERY; ELECTRICITY, subhead *Voltaic Electricity.*

VOLTAIRE, *vol tair',* the assumed name of JEAN FRANÇOIS MARIE AROUET (1694–1778), a French writer and philosopher, was born at Paris. His father, a notary, gave him the best education possible, and the young man was early recognized as a scholar. In 1718 a tragedy named *Oedipus* was brought out by him and was most enthusiastically received. He soon became a fashionable poet, and resided mainly at Paris, in the midst of the most brilliant society.

In 1726 he was imprisoned in the Bastille for having sent a challenge to the Chevalier Rohan, by whom he had been insulted, but he was liberated within a month and allowed to go to England. Here he resided till 1729, in friendship with some of the chief literary men of the day, and he acquired a knowledge of English literature. His *Henriade,* an epic celebrating the exploits of Henry IV of France, was completed and published by subscription in England, and was widely read throughout Europe, except in France, from which country it was excluded by the government because of its forceful presentation of the idea of religious toleration.

After his return to France, Voltaire lived chiefly at Paris till 1734. During this period he raised himself from very moderate circumstances to a condition of affluence by successful monetary speculations. From 1734 to 1749 he resided with Madame du Châtelet at Cirey, in Lorraine, and he produced many plays during this period. After

the death of Madame du Châtelet, Voltaire accepted the oft-repeated invitations of Frederick the Great to live at his court, at Potsdam. Here he was received with great honor, but a series of disagreements with the king ended in Voltaire's retirement from the Prussian court in 1753. After some unsettled years he fixed his residence with his niece, Madame Denis, at Ferney, near the boundary of the Republic of Geneva, and here he received a constant succession of distinguished visitors and maintained a correspondence which included in its range most of the rulers and savants of Europe. In February, 1778, he returned to Paris, but died soon afterwards.

Voltaire's works embrace almost every branch of literature—poetry, the drama, romance, history, philosophy and even science. He produced no single literary masterpiece; his greatness lay in his power to discern fanaticism and superstition, and nearly all his works are strongly animated by a spirit of hostility to the priests and the religion they represented. He was one of the foremost of that band of writers whose revolt against conventions, openly and most forcefully expressed, was preparing the way for the French Revolution. It is the commonly accepted opinion that he was an atheist, but this has never been proved. Voltaire's literary fame chiefly rests on his philosophical novels, *Zadig, Candide, L'Ingénu;* his histories, *The Age of Louis XIV, The History of Charles XII*; his correspondence, and more than all, perhaps, on his poetical epistles, satires and occasional light poems, all of which exhibit wit, gaiety, vivacity and grace.

VOLT'METER, an instrument for measuring the pressure of an electric current. It consists of a permanent steel horseshoe magnet, with a piece of soft iron attached to each pole. Between the poles, a soft iron cylinder is suspended, so that it can rotate vertically. Around this cylinder is a light rectangular frame of copper, wound with a coil of insulated wire. Spiral springs are attached at each end of this frame, and a needle, which moves over a graduated dial, is attached to the upper end of the axis. When an electric current passes through the coil or wire, it causes the copper frame to turn upon its axis. The springs furnish an amount of resistance that must be overcome by the current, and the position of the needle on the dial indicates the pressure. Voltmeters are used with dynamo electric machines. See VOLT.

VOLUNTEERS', citizens who, of their own accord, offer the state their services in a military capacity. The oldest volunteer force in Great Britain is the Honorable Artillery Company of the city of London, which received its charter of incorporation from Henry VIII. Until the second year of the World War Great Britain depended upon a volunteer army to take care of territorial defense, and its volunteer forces in 1914 numbered over 251,000. Not until May, 1916, was conscription put in force in Great Britain. It was applied to England, Scotland and Wales, but not to Ireland, which, however, sent large numbers of volunteers to the front. Canada contributed a volunteer army of over 400,000, but adopted conscription in December, 1917. New Zealand, South Africa and Australia relied wholly on volunteering, and all contributed generously. In all of the other allied nations, as well as in the enemy countries, conscription had been a permanent policy before the war.

In the United States. The volunteers in American armies played an important part in all wars before America's entrance into the World War. Though conscription was resorted to in the Civil War, about 2,500,000 enrolled voluntarily on the Union side, and half as many on the Confederate. Volunteers and regulars made up the American army of the Spanish-American War. In the World War there were calls for volunteers in special branches of the service, and the state national guards were classed as volunteers, but the bulk of the great army that contributed so much to the defeat of Germany was made up of men enrolled through the selective draft. This was the first time that America ever enrolled all of its men under forty-six years of age for military service. Navies are usually recruited through volunteering, but this is a matter of custom and precedent. See CONSCRIPTION; WORLD WAR.

VOLUNTEERS OF AMERICA, a religious and philanthropic organization, formerly the American branch of the Salvation Army. In 1896 Ballington Booth, head of the Salvation Army in America, believing that the methods of his father, William Booth, were not perfectly suited to conditions in America, severed the connection of his branch which, thenceforth, has had an independent

existence. The main purpose of the English and the American bodies, however, has remained the same.

The Volunteers are organized on a semi-military plan, and the officers bear military titles. They support various benevolent institutions. Lodging houses for destitute men and women and fresh-air camps for women and children are among their most important charities. A great quantity of Christian literature is distributed, and open-air religious services are conducted on the streets. A Volunteer Hospital has been established in New York City, where needy cases are taken care of. The official organ of the society is *The Volunteers' Gazette,* published at its headquarters in New York. General Ballington Booth and his wife, Maud Ballington Booth, are joint presidents. See SALVATION ARMY.

VOMITING, the forcible expulsion of matter from the stomach, through the oesophagus, or gullet. It is not a disease in itself, but it is a symptom common to numerous diseases, or as an accompaniment of extreme nervous sensitiveness. The treatment of vomiting depends upon its cause and upon the disease, if any, which accompanies it. Lying down, the application of mustard to the pit of the stomach, or small doses of soda, ice, whisky or coffee will sometimes relieve it. While sudden and violent vomiting in a healthy person is an indication of some poisonous substance in the stomach, yet very frequently vomiting is nature's method of relieving an overloaded stomach. See NAUSEA.

VORTICELLA, *vor te sel'lah,* or **BELL ANIMALCULE,** *an i mal'ku le,* a genus of infusoria, or one-celled animals characterized by a bell-shaped body, the opening of which is surrounded by tiny hairs, or cilia. These cilia are kept in constant and rapid motion, whereby they draw in particles of food. At the opposite end of the body is a slender stem, by means of which the animal attaches itself to objects in the water, such as rocks or weeds. This stem also moves, with a spiral springlike motion, and may be drawn up into the body when the animal wishes to detach itself from its moorings and swim freely about.

VOSGES, *vohzh,* **MOUNTAINS,** a chain of mountains about 100 miles long, extending in a north-northeast direction along the frontiers of Alsace in France, their course being nearly parallel with that of the Rhine. They are separated from the Jura Mountains by the valley of the Doubs on the south. The Vosges are composed chiefly of granite and are covered with forests of pine and beech to a height of about 3,600 feet, beyond which their summits, which are rounded in forms, are grassy. The highest peak is Ballon de Guebwiller, 4,067 feet. These mountains contain considerable silver, copper, lead and coal and large quantities of rock salt. Some of the bitter fighting of the World War took place in the Vosges region.

VOTE. See ELECTION; BALLOT.

VOTING MACHINE, a device for automatically registering and counting votes, having the advantages of secrecy, simplicity, rapidity of registration and counting and the avoidance of duplication.

In most patterns of voting machines, the voter enters the booth, and not till all the curtains are closed will the machine register his vote. The names of the candidates are arranged in order, either by parties or alphabetically. The voter can either vote a straight ticket or can vote for individual candidates. In the former case, either by the use of a key or by means of a lever, he registers a vote and thus locks the mechanism, so that he cannot vote further, unless, by turning back the lever, he cancels his first vote. If he wishes to split the ticket, he turns a lever or key for one candidate for each office, and is prevented thereby from voting for any other candidate. As he leaves the booth, by opening the curtains or doors at the exit he sets the machine for the next voter. Each vote cast for each office or for a straight ticket is registered by a patent device on a slip of paper, so that as soon as the last vote is cast, the final returns are ready to be announced. Many states have authorized the use of voting machines at the option of the local authorities.

VOWEL, an open sound made by the voice in speaking, distinguished from the consonant sounds, which are made with the organs of speech more or less closed. Vowels may be sounded by themselves, but consonants can be pronounced only in combination with vowels. In English, the vowel sounds are represented by the letters, *a, e, i, o, u,* and sometimes *w* and *y.* Each really represents several sounds, as the a-sounds in the words *father, flask, hall, what, any, preface, final* and *abound.* Most other languages have vowel sounds which the English does

not possess. A more detailed discussion of vowels may be found in the article ORTHOGRAPHY.

VUL'CAN, called by the Greeks Hephaestus, in classical mythology, the god who presided over fire and the working of metals, and who patronized handicraftsmen of every kind. He was the son of Jupiter and Juno, but, unlike the other gods, he was seriously lame. By some writers he was said to have been born lame, and for that reason he was believed to have been thrown by his mother from Olympus; but by others his lameness is attributed to his having been thrown from Olympus by Jupiter, for interfering in Juno's behalf in a quarrel between her and Jupiter.

VUL'CANIZING. See RUBBER AND RUBBER MANUFACTURE.

VUL'GATE, the Latin translation of the Bible, which has, in the Roman Catholic Church, official authority, and which the Council of Trent, in its fourth session, on May 27, 1546, declared "shall be held as authentic in all public lectures, disputations, sermons and expositions; and that no one shall presume to reject it under any pretense whatsoever." Even in the early period of the Church, a Latin translation of the Old Testament existed, made not from the Hebrew, but from the Septuagint. Saint Jerome found that this translation was not always accurate, and between A. D. 385 and 405 he made a new Latin translation from the Hebrew, with the aid of the best Greek translations. This at first met with the greatest opposition, as the Septuagint was regarded as an inspired translation, and any deviation from it was considered sacrilegious. Before his death Jerome had justified himself and proved the purity of his intentions, but it was not until the ninth century that his version came to be used throughout the Church and not until centuries later that it was authorized. The version now in use is the edition published by Clement VIII in 1592.

VUL'TURE, the common name for a class of carrion-eating birds, characterized by necks destitute of feathers and by elongated beaks, with curved upper mandibles. Their talons are not relatively strong, and in tearing their prey they make more use of their beaks than of their claws. Vultures are usually of a cowardly disposition and will not attack live animals, unless the latter are seriously wounded or dying, as they feed almost entirely on decaying animal flesh. They fly high in the air and detect their prey from great distances. They are valuable scavengers in all warm and tropical countries. The California vulture has a long, flat, orange-colored head and dull black plumage, with a grayish wing band. It builds a loose nest of sticks, in a hollow in a tree or cliff, and lays one round, greenish-white egg. The Egyptian species, called "Pharaoh's hen," is found in the countries bordering the Mediterranean. See CONDOR; TURKEY BUZZARD.

VULTURES
1, Griffin; 2, Pondicherry.

W, the twenty-third letter of the English alphabet. It is formed, as its name indicates, by doubling the *u* or *v*, and before it appeared as a separate character in English its sound was sometimes represented by *uu* or *vv*. At the end of words or syllables it is either silent, as in *low*, or it modifies the preceding vowel, as in *new*, *how*, having then the power of a vowel.

WABASH, *waw'bash*, IND., the county seat of Wabash County, forty-two miles southwest of Fort Wayne, on the Wabash River and on the Big Four and the Wabash railroads. It is surrounded by a rich agricultural and stock-raising region. Its industries include railroad shops, bridge and iron works, cabinet and motor truck factories and woolen and lumber mills. The city is built in rock and is hilly even in the business section. It has a Federal building, Carnegie Library, Masonic Temple and Memorial Hall. Wabash was settled and incorporated in 1837, and was chartered as a city in 1866. Population, 1910, 8,687; in 1917, 8,737 (Federal estimate).

WABASH RIVER, a river 550 miles in length, rising in the western part of Ohio, flowing northwestward, westward then southward into the Ohio thirty miles below Evansville, Ind. It crosses Indiana, and in the latter part of its course forms a part of the boundary between Indiana and Illinois. It is navigable during high water as far as Lafayette, Ind., and at ordinary levels to Covington. Its chief tributary is the White River. Some of the principal towns on its banks are Wabash, Peru, Logansport, Lafayette, Covington, Terre Haute and Vincennes.

WACHT AM RHEIN, DIE ("the Watch on the Rhine"), a German patriotic song. The words were written by Max Schneckenburger in 1840, when the left bank of the Rhine seemed in danger of falling into the hands of France. The music, by Karl Wilhelm, was composed in 1854.

WA'CO, TEX., the county seat of McLennan County, located ninety-seven miles southwest of Dallas, on the Brazos River and on the Texas Central, the Missouri, Kansas & Texas, the Saint Louis Southwestern, the Gulf, Colorado & Santa Fé, the San Antonio & Aransas Pass and the International & Great Northern railroads. Water with medicinal properties obtained from artesian wells makes the city a popular health resort. It is surrounded by an agricultural and stock raising district, and is the center of a large wholesale business. There are grain elevators, flour mills, cotton and woolen mills, foundries, machine shops, bottling works and packing houses. Notable buildings are the Waco Natatorium, a Federal building, a Carnegie Library, courthouse and Masonic Temple. Baylor University and Paul Quinn College are located here.

Waco was laid out in 1849 and was incorporated the next year. It has adopted the commission form of government. Population, 1910, 26,425; in 1917, 34,015 (Federal estimate).

WADAI, *wah'di*, formerly a native state in the central part of Africa, annexed to the French Congo in 1909. The boundaries are indefinite, but the area is estimated at 170,000 square miles. The surface is mostly of a desert character, but there are oases scattered through the region, and in some sections there are fertile tracts covered with forests. The population, estimated at 2,000,000, is composed chiefly of negroes and Arabs, who are Mohammedans. The capital is Abeshr, and it is connected with Bengeazi by caravan route.

WAGER, *wa'jur*, a bet, also something staked on any uncertain outcome of an issue, such as the result of a contest, or the in-

evitable alternative in events, such as elections and the weather. The party whose opinion proves to be correct receives what has been staked by both. By statutes of England, Scotland and the United States, all contracts or agreements, whether oral or in writing, depending on wagers, are null and void, and money due thereon cannot be recovered in any court of law. A wager is therefore called a *debt of honor,* since it cannot be collected except through the good faith of the parties.

WAGES, *wā'jez.* In modern industry production requires land, capital and labor. The payment for land is *rent*; the payment for capital is *interest,* and the payment for labor is *wages.* In the common meaning of the term *wages* is the money one man receives for working for another. Wages may be classified as *nominal* and *real.* Nominal wages are the wages expressed in money, or as an absolute quantity, as five dollars a day. Real wages denote the purchasing value of the money received. To illustrate: If the cost of living advances and a laborer's wage remains the same, his real wage is lowered. If a bricklayer who received five dollars a day in 1914, received the same wage in 1919, when the cost of living had increased fifty per cent, his real wage was only one-half of what it was in 1914. To enable him to maintain his standard of living his nominal wage in 1919 would have to be raised to seven and one-half dollars a day.

Difference in Wages. In economics, labor is considered as a commodity, the same as land, building material or wheat, and one of the chief causes in fixing wages is the law of supply and demand, other conditions being equal. When there are more laborers than production requires, wages will be low; when laborers are scarce, producers bid for their services, and wages are high. Wages in some occupations are higher than in others because of the nature of the occupation. Permanency of occupation, for instance, is an important factor in fixing wages. One can afford to work for a lower wage at an occupation which furnishes employment the year round than at an occupation which furnishes employment only part of the time. Skilled labor commands higher wages than unskilled labor, and dangerous occupations higher than those not considered as dangerous.

Wages and Profit Sharing. Many large firms distribute periodically among their employes a certain per cent of their profits. From the viewpoint of economics, their share of profit should not be considered as wages, but from the practical viewpoint of both employer and employe it is considered as so much additional compensation, or so much increase of the laborer's share of production.

Influence of Labor Organizations. Labor organizations have in many instances secured higher wages for their members than could have been secured without organization, because the organization can resort to collective bargaining and force upon employers terms that the workmen individually cannot secure. On the other hand, the uniformity of wages thus secured may work injustice to the most efficient laborers, who under individual initiative could increase their output and are thus deprived of their full share of production.

The Wage Problem. The problem of wages is always before the industrial world, and it is the supreme cause of conflict between capital and labor. There are those who believe that capital and labor are and ever must be antagonistic, and that the capitalist class should be dispossessed of their property. The socialists claim that all sources of production should be the property of the state and that the laborer should receive all the profits for his work. Present tendencies are toward more harmonious relations between capital and labor, and toward just compensation of laborers.

Related Articles. Consult the following titles for additional information:
Capital — Profit Sharing
Labor Organizations — Socialism

WAGNER, *vahg'nur,* WILHEM RICHARD (1813–1883), a German composer, poet and miscellaneous writer, born at Leipzig. He received his education at Leipzig and Dresden and after 1834 filled various musical engagments at Magdeburg, Riga and Königsberg. In 1839 he went to Paris and London and there composed his operas *Rienzi* and *The Flying Dutchman.* The brilliant success of the operas secured him the conductorship at the Royal Opera of Dresden in 1843. He joined the

WILHELM RICHARD WAGNER

insurrectionary movement of 1848 and was compelled to exile himself. Until his return to Germany, in 1864, he spent most of his time in Switzerland, Italy, Paris and London. His *Tannhäuser* and *Lohengrin* appeared in 1845 and 1850, respectively. The king of Bavaria, Louis II, became an enthusiastic patron of Wagner, and the theater at Baireuth, especially built for Wagner by the contributions of Wagner societies throughout the world, was chiefly supported from the king's purse. Here the famous tetralogy *Der Ring des Nibelungen,* consisting of *Das Rheingold, Die Walküre, Siegfried* and *Götterdämmerung,* was first performed in 1876. About a year before his death Wagner wrote *Parsifal,* which has since been produced with emphatic success. He gave to his works a national character by selecting his subjects from old German legends. His theory, founded upon the ideas of Gluck and Weber, was that in a perfect musical drama, the three arts, poetry, music and dramatic representation, should be welded together into one well-balanced whole. His particular views on music are embodied in a well-known work, entitled *Oper und Drama.* See OPERA.

WAG'ON, a four-wheeled vehicle drawn by one or more horses and used for carrying passengers or merchandise. In cities they are rapidly being displaced by automobile trucks. Wagons are constructed of a great variety of patterns, the body being adapted to the particular use for which the vehicle is intended. Farm wagons have long rectangular boxes, so made that they can be taken off or put on the gear at will. Most of these wagons may also have the running-gear extended or shortened to suit the purpose for which the wagon is needed. Road wagons have a light running-gear, springs and upholstered seats. The greatest wagon works in America are those of a famous company at South Bend, Ind. See CARRIAGE.

WAGRAM, *wah'gram,* **BATTLE OF**, a battle that resulted in one of Napoleon's most celebrated victories. It was fought at the village of Wagram, twelve miles northeast of Vienna, Austria, on July 5 and 6, 1809, between a force of 128,600 Austrians under Archduke Charles, and 181,700 French under Napoleon. The losses on each side were about 25,000, killed and wounded. On the 12th of the month following the battle an armistice was signed at Znaim, and peace was concluded on October 14, at Schönbrunn. By the treaty Austria lost some territory to Bavaria and Saxony, and gave up its sea coast to France; a part of Poland and Galicia was ceded to Russia, and Joseph Bonaparte was acknowledged king of Spain.

WAG'TAIL, a group of birds so called from their habit of jerking their long tails when running or perching. Though several species are common in Europe, rarely is the bird seen in the United States. The wagtails frequent muddy lands and pastures, running rapidly along the edge of water and catching the insects they find there. A species of wagtail breeds on the coasts of Alaska in summer, making its nest of woven roots and grasses on or near the ground. The eggs are white with brown spots.

WAITE, MORRISON REMICK (1816–1888), an eminent American jurist, born at Lyme, Conn. He graduated at Yale in 1837 and was admitted to the bar two years later. He practiced successfully in Maumee City and Toledo, Ohio, was elected to the legislature and in 1871 was sent to Geneva as United States counsel in the Alabama case. President Grant appointed him to succeed Salmon P. Chase as Chief Justice of the Supreme Court of the United States in 1874. He held the position until his death, winning esteem for his impartiality and learning. Among the important questions presented to the Supreme Court and decided during Chief Justice Waite's term were those affecting polygamy, election laws, the civil rights of negroes, the Bell telephone case, the power of removal by the President and the Chicago anarchist cases.

WAKE, in the Church of England a festival formerly held on the anniversary of the day on which the parish church was consecrated and dedicated. The evening preceding the anniversary was spent in prayer and singing; the festival itself sometimes lasted several days and took the form of a carnival. The vigil kept by Roman Catholics over the dead before burial is known as a wake.

WAKE-ROBIN. See TRILLIUM.

WALDENSES, *wal den'seez,* a Christian sect founded in the twelfth century by Peter Waldo, a rich merchant of Lyons, France. About 1170 Waldo gave away his goods and his money to the poor and began preaching a life of poverty, chastity and obedience. While holding to the Roman Catholic faith,

he believed the people should be preached to in their own dialects, that religious writings should be translated into their language, and that each man should be his own interpreter of the Bible. His followers, known as "the Poor Men of Lyons," suffered many persecutions, and in 1231 were excommunicated by the Pope. Their chief strongholds then as now, were the Cottian Alps, southwest of Turin. Since 1848 they have had the same religious and political rights as other religious sects in Italy, where they number about 12,000. Branches of the Church have been established in Argentina, Uruguay and the United States.

A typical costume

WALES, *waylz,* the smallest division of Great Britain, situated in the southwestern part of the island, forming a peninsula between Bristol Channel, on the south, and the Irish Sea, on the north. It has an area of 7,446 square miles, or a little less than that of the state of New Jersey. Its surface is mountainous, particularly in the north, where the ranges are an extension of those of England. The country is rich in minerals, particularly coal, iron, copper and slate, and to these Wales owes its chief wealth. The coal trade is the most important and extensive, and the city of Cardiff on the Bristol Channel is one of the largest coal ports in the world. The presence of coal and iron ore has given rise to extensive iron and steel works, and there are also important copper plants. Other manufactures include woolen goods, especially flannel, coarse cloth and hosiery.

Previous to the Roman occupation, Wales appears to have been inhabited by a mixture of primitive Iberians and invading Celts. During the latter part of the Roman occupation one of the four provinces into which the entire island was divided included Wales and was called *Britannia Secunda.* After the invasion of the Saxons the country acquired a distinctly national character, becoming the refuge of the Celts, or early Britons, who were gradually driven to the west. The country was conquered in the thirteenth century by Edward I, who made his eldest son Prince of Wales, a title that has ever since been conferred upon the heir to the British crown. Succeeding this date there occurred a number of national uprisings, and the struggle for independence in Wales was not entirely suppressed till 1536, when the country became incorporated with England, and its inhabitants received all the privileges of English subjects. The language is Welsh, which is a branch of the Celtic, different from that used by the Irish and the Scotch Highlanders. The political and educational systems of Wales are identical with those of England. See ENGLAND; GREAT BRITAIN; CELTS.

WALES, PRINCE OF, a British title borne by the heir apparent to the British throne. It was first conferred by Edward I on his son, at the time of his conquest of the principality of Wales. Edward III was never Prince of Wales, but the title has been conferred on all the male heirs apparent to the English throne from the time of Edward the Black Prince, son of Edward III. The title is not hereditary, but is purely honorary; it does not pass to the holder automatically, but must be conferred with appropriate ceremony. It implies no power or authority, and the accompanying income is voted by Parliament.

As heir to the crown of Scotland, the Prince of Wales bears the titles of *Prince and High Steward of Scotland, Duke of Rothsay, Earl of Carrick, Baron of Renfrew, and Lord of the Isles.* The title Earl of Dublin also was borne by Albert Edward when he was Prince of Wales.

The title was bestowed on the present Prince of Wales in June, 1910, less than three months after his father ascended the throne of Great Britain.

WALHALLA, *wahl hahl'a,* or **TEMPLE OF FAME,** a magnificent marble palace erected in 1830, near Ratisbon, Bavaria, by Ludwig I. The building, 115 by 246 feet in size, is in a style similar to Greek Doric. The pediments and frieze contain sculptures representing scenes from the early history of the Teutonic peoples, and inside are busts of noted Germans. The building is named for Walhalla, the mythological hall of the Norse deities.

WALKER, FRANCIS AMASA (1840–1897), an American economist and statistician, born at Boston, Mass., the son of Amasa Walker. He graduated at Amherst College and after-

ward studied law. He served in the Union army in the Civil War and was made brigadier general for gallantry at Chancellorsville, where he was wounded. From 1865 to 1867 he taught Latin and Greek at Williston Seminary, and in 1869 he was appointed chief of the bureau of statistics at Washington. As supervisor of the census of 1870, as United States Indian Commissioner in 1872 and (from 1873 to 1881) as professor of political economy in the Sheffield Scientific School of Yale College, he rendered distinguished service. In 1881 he became president of the Massachusetts Institute of Technology. He published many works, including volumes on the *Indian Question, Political Economy, The Wages Question, Money, International Bimetallism* and *The Making of the Nation.*

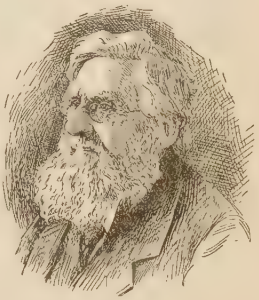
WALKER, WILLIAM (1824–1860), an American adventurer, notorious as a leader of several filibustering expeditions. He was born at Nashville, Tenn., and was graduated at the University of Nashville. After a course in law he was admitted to the bar, and later he studied medicine at the universities of Edinburgh and Heidelberg. On his return to America he engaged in journalism.

In the summer of 1853 Walker organized an expedition to conquer the state of Sonora, Mex. Forced to flee from Mexico on account of a lack of provisions and ammunition, he was arrested by United States authorities at San Diego, and was tried for violating neutrality, but was acquitted. He then conducted expeditions in Nicaragua and Costa Rica, and each time was driven out. After several attempts to conquer Honduras, he was compelled to surrender to the Honduran government, was condemned by court martial and executed. See FILIBUSTER.

WALKERVILLE, ONT., on the Grand Trunk, the Wabash, the Michigan Central and the Pere Marquette railways, one and one-half mile from Windsor, and directly across the river from Detroit. Steamship lines run to Fort William, Port Arthur, Montreal and intermediate points. The industries of the town are supplied by Niagara electric power; there are varnish and paint factories, wire fence works, bridge works, tobacco, clothing and carriage factories, and manufactories of automobile bodies and trimmings, furnaces, castings and marine engines. Population, 1916, 6,500.

WALKING STICK, a name applied to a group of curiously-shaped insects, which closely resemble a small branch with twigs. In the southeastern part of the United States is found a typical species. The individuals have long, slender bodies and long, thin legs. They are green in summer, but turn brown in autumn; thus protected from detection they escape all but the closest scrutiny. The local names are *devil's horse* and *mule killer.* See LEAF INSECTS; PROTECTIVE COLORATION.

WALLACE, ALFRED RUSSEL (1822–1913), an English naturalist, born at Usk, Monmouthshire, and educated at Hertford Grammar School. He spent many years in traveling, especially in South America and the Asiatic islands, and the valuable material collected in these scientific explorations he embodied in *Travels on the Amazon and Rio Negro, The Malay Archipelago, Tropical Nature* and *The Geographical Distribution of Animals.* His observation of animal life and his philosophical nature led him to investigations which resulted in the formulation of a theory of natural selection and evolutionary development. Before Darwin gave his famous work to the world Wallace had published his *Speculation on the Origin of Species.* His share in establishing the theory of evolution has been acknowledged by Darwin. But while Darwin, in his later editions of the *Origin of Species,* somewhat modified his original conclusions, Wallace, in a late work, *Darwinism, an Exposition of the Theory of Natural Selection, with Some of its Applications,* strongly insists upon the complete controlling power of these primary laws and conditions. Moreover, he differs from Darwin on the subject of the intellectual, moral and spiritual nature of man. He contends that the higher faculties have been developed, not under the law of natural selection, but under a higher law, which has come in imperceptibly; and he maintains that the Darwinian theory, instead of opposing, "lends a decided support to a belief in the spiritual nature of man." He claimed to be a true Darwinian.



ALFRED RUSSEL WALLACE

In later years Wallace became interested in social questions, wrote on the subject of land tenure and against compulsory vaccination. He became a convert to spiritualism, and wrote *Miracles and Modern Spiritualism.* He published his autobiography, entitled *My Life.* His other books are *Social Environment and Moral Progress, The Revolt of Democracy* and *Man's Place in the Universe.* See EVOLUTION.

WALLACE, LEWIS (1827–1905), an American soldier and novelist, generally known as Lew Wallace. He was born in Brooksville, Ind., received a common school education and began the study of law, which he practiced at intervals in Crawfordsville, Ind. He took part in the Mexican War, with rank of lieutenant, and was a member of the Indiana state legislature in 1848. At the outbreak of the Civil War he entered the service as colonel of an Indiana regiment, was appointed brigadier-general in 1861 and was made major-general for distinguished services at Fort Donelson in 1862. He was removed from command by Halleck, but was reinstated by Grant. He was sent to Mexico on secret diplomatic service in 1866, was elected governor of New Mexico in 1878 and was made minister to Turkey in 1881. His best-known works are *Ben Hur, The Fair God, The Prince of India* and *The Boyhood of Christ.*

WALLACE, WILLIAM, Sir (about 1272–1305), the first of the great Scottish patriots, a man of herculean proportions and strength and possessing in a high degree those qualities of leadership which made his name famous. The king of England deposed the Scottish king in 1296 and placed over Scotland a guard of English soldiers. Wallace one day quarreled with and killed one of these soldiers, and escaped. He gathered a band of Highlanders and began a guerilla warfare on the English.

After collecting a considerable force, he was besieging the castle of Dundee when he heard that Surrey and Cressingham were advancing upon Stirling with a large army. He met them in the vicinity of that town and gained a complete victory (1297). After this Wallace gained the title of guardian of the kingdom and conducted a series of organized raids into England. In 1298 Edward I entered Scotland, and Wallace retired before him, wasting the country, but he was at length overtaken at Falkirk and was compelled to fight; after a gallant resistance, he was defeated. He succeeded in escaping, and little is known of his movements thenceforth. He was excluded from the peace granted by Edward to the Scots in 1304, and when he fell into the hands of the English he was conveyed to London and executed as a traitor, though he had never sworn fealty to England.

WALLA WALLA, *wol'a wol'a,* WASH., commercial center of the southeastern part of the state, county seat of Walla Walla County, situated 200 miles southwest of Spokane on the Walla Walla River, on the Oregon-Washington Railroad and Navigation Company and the Northern Pacific railroads. It is thirty miles east of the navigable Columbia River, and a hard-surfaced road has been constructed from Walla Walla to Wallula, the nearest port, to connect with boat lines. Walla Walla is beautifully located in the midst of a fertile valley which produces 5,000,000 bushels of wheat annually, besides extensive fruit, vegetables, live stock and dairy and poultry products. Its industries include cold storage and the manufacture of harvesting and threshing machinery, flour, leather, ice, sashes, doors and blinds.

Whitman College, located here, has been established sixty years and is one of the best known institutions of higher education in the Northwest. Other schools are the Saint Paul's School for girls, the Saint Vincent's Academy and the Walla Walla College. There are a Federal building, a courthouse, a Carnegie Library, a hospital and a home for widows and orphans.

Walla Walla, a term which means *rushing water,* grew up about a military post, established in 1856, and was at first known as Steptoe City. In 1868 it was chartered under the present name. The commission form of government was adopted in 1911. Population, 1910, 19,364; in 1917, 26,067 (Federal estimate).

WALLENSTEIN, *vahl'en stine,* or **WALDSTEIN,** ALBRECHT EUSEBIUS WENZEL VON, Duke of Friedland, Sagan and Mecklenburg (1583–1634), a famous leader in the Thirty Years' War, born at Hermanic, in Bohemia, of poor but noble parentage. He was educated in a Jesuit College and at the universities of Padua, Altdorf and Bologna. Through a wealthy marriage he became prominent in affairs in Bohemia. For

military service against Venice in 1617 he was made a count and commissioned a colonel. He took service in the Austrian army in the struggle against the Turks, and when the Thirty Years' War broke out in Bohemia (1618), he joined the imperial forces against his native country.

With a large army, which he raised to assist the emperor against the Protestant League, he defeated Count Mansfeld at Dessau (1626) and compelled Bethlen Gabor, of Transylvania, to conclude a truce. He also conquered Silesia and bought from the emperor, partly with military services, partly with plunder, the duchy of Sagan, and other extensive estates.

In September, 1630, owing to the jealousy of the nobles and the license of his followers, he was deprived of his command and retired to his duchy of Friedland, until the emperor was compelled to seek his aid against Gustavus Adolphus. Wallenstein then obtained almost absolute power, and his behavior thenceforth leaves no doubt that the emperor's interests were second to his own, and that he would not have hesitated to join the emperor's enemies, to secure his own independence and the crown of Bohemia. After some partial successes he encountered the king of Sweden at Lützen in 1632, and in the battle which took place Wallenstein was defeated and Gustavus was killed. Wallenstein had unsuccessfully treated on his own account with the Swedish king, and he now secretly reopened negotiations with France and the German princes, occasionally taking the field to display his military power. The court at Vienna was well aware of his double dealing, but the emperor was not strong enough to remove him, and he therefore had him assassinated. See THIRTY YEARS' WAR.

WALLFLOWER, a shrubby herb, belonging to the mustard family, native to Southern Europe, so called because it is often found growing among the stones of fallen walls. It thrives in dry soil and gravel and grows well on stony cliffs. The flowers in the wild state are invariably yellow; under cultivation they exhibit a variety of colors. A red specimen is known as bleeding heart. *Heartsease* and *gillyflower* are other names by which the plants are known. The fragrant, velvety flowers are much admired, and have gained for the plant a place in Northern hothouses.

WALL OF CHINA, THE GREAT. See GREAT WALL OF CHINA.

WALLOONS, *wal loonz'*, a Celtic race inhabiting Southern Belgium. They are the descendants of the ancient Belgae and resemble the French more than they do the Germans, being short and mostly of dark complexion. Their language, also called Walloon, is a French dialect, retaining numerous Gallic words, but it varies somewhat in the different provinces. There are about 2,750,000 Walloons now in Belgium.

WALL PAPER, paper used for decorating the walls and ceilings of rooms. The use of paper hangings originated among the Chinese and was not introduced into Europe until the eighteenth century. The papers at first were imitations of the leather, tapestry and velvet hangings which had long been common as wall decorations there, but gradually the designs became original and varied and a large industry grew up. In America the wall paper industry represents approximately $25,000,000 investment of capital. The design in the sheet, which is printed on presses resembling printing presses, is repeated at intervals; and when the paperhanger puts it on the wall he is careful to match the pattern. Some of the best artistic talent is engaged in the production of wall paper designs.

WALL STREET, the center of financial operations in the United States, so called from the street in lower New York City, upon which are located the New York Stock Exchange, the Consolidated Exchange and numerous banking institutions that figure largely in the money market. The street itself extends from Broadway to East River, following the line of the old city wall built by Governor Peter Stuyvesant in 1653 to protect the town from possible attacks by the Indians. This wall, repaired and replaced from time to time, formed the northern boundary of the city for more than fifty years.

WALNUT, *wawl'nut*, a genus including about twelve species of beautiful trees, mostly natives of North America and Asia. The three best-known species in America are the *English*, or *Persian* walnut, the *black* walnut and the *white* walnut, or *butternut*.

The English, or Persian, walnut is a native of Persia and the Himalaya region, and is extensively cultivated on the California coast and in Southern Europe. It is a handsome

tree, attaining a height of from sixty to ninety feet. It yields a sweet sap, somewhat like that of the sugar maple. The nut, which grows in a thin, wrinkled, two-valved shell, has a high food value, being a greater heat producer than almost any kind of meat. The unripe nuts are much used for making pickles and ketchups. The wood called Circassian walnut, is valuable for cabinet work. The black walnut sometimes attains a height of 150 feet and a diameter of six feet, and is chiefly valued for its timber, which is hard, durable, fine-grained and a beautiful rich brown in color. It has been much used for interior finishing and for furniture, but is becoming rare. A beautiful brown dye obtained from the bark and the husks of the nuts has been much employed in staining lighter woods.

The nuts, which are encased in a woody shell, are deliciously flavored, but are of comparatively little commercial importance because the oil in them soon becomes rancid. The white walnut, or butternut, is found from New England to Georgia and as far west as Kansas. Wide-spreading and lofty, reaching a height of seventy-five feet or more, it is one of the handsomest of American forest trees. The compound leaves and green husks are clammy and hairy, the sap is sugary, like that of maple, and the root is mildly cathartic. The nuts are good to eat, either green, made into pickles, or dried.

WALPOLE, *wawl'pole,* HORACE, Sir, fourth Earl of Orford (1717–1797), an English man of letters, the son of Sir Robert Walpole. He received his education at Cambridge, and following his graduation spent several years in travel. In 1741 he entered Parliament. His first publication was *A Catalogue of Royal and Noble Authors,* which was followed in 1764 by *The Castle of Otranto,* a romance abounding in mystery, which was at the time of its publication very popular. Walpole is, however, chiefly remembered for his *Letters,* which give entertaining pictures of the society of his day. While in general these pictures are true to life, they contain many inaccuracies and exaggerations and are therefore of little value to historians.

WALPOLE, ROBERT, Sir, first Earl of Orford (1676–1745), an English statesman. He was educated at Eton and at King's College, Cambridge, succeeded to his father's estate in 1700 and entered Parliament as member for Castle Rising. In 1702 he was elected for King's Lynn, became an active member of the Whig party and soon distinguished himself by his business capacity and by his ease in debate. He was successively Secretary of War, paymaster of the forces and First Lord of the Treasury, Chancellor of the Exchequer and Prime Minister. This latter office he held for over twenty-one years, and, during his long administration the Hanoverian sucession became firmly established, owing largely to his prudence and political sagacity.

He promoted by an enlightened policy the commercial prosperity of the nation and relieved the weight of taxation by many improvements in the tariff. Although he was constantly accused of corruption in office and was once even sent to the Tower on such a charge, the fact that he became no wealthier through his long term of office, leads to the conclusion that the reports of his contemporaries were unfounded.

WALRUS, *wol'rus,* a marine flesh-eating mammal, related to the seal, and inhabiting the colder climates. It has two large, pointed

THE WALRUS

tusks, from fifteen inches to two feet in length, directed downward and slightly outward from the upper jaw. The tusks are used in digging up clams and other food from the bottom of the sea. The animals are valuable because of their hides and oil. They are either killed with rifles or taken with harpoons.

WALTHAM, *wol'tham,* MASS., a city in Middlesex County, ten miles west of Boston, on the Charles River and on the Boston & Maine Railroad. It manufactures more watches than any other city in Massachusetts; its watch factories are among the largest in the world. There are also large cotton and woolen mills, saddlery works, machine shops and foundries. Waltham has many beautiful parks, and is the scene of an annual water carnival on the Charles

River. It has a state armory and a public library. The state school for the feeble-minded is located here. It was originally a part of Watertown, but was made a separate town in 1738 and chartered as a city in 1884. The city manager form of government was adopted in 1917. Population, 1910, 27,834; in 1917, 31,011.

WALTON, *wawl'ton,* IZAAK (1593–1683), the author of the famous *Compleat Angler,* a treatise on fishing. For a number of years he was in business in London, as a linen draper according to some accounts; as an ironmonger according to others. He retired at the age of fifty and devoted his remaining forty years to a life of cultured ease and pleasure. His first edition of *The Compleat Angler* appeared in 1653. It is to his exquisite delineations of rural scenery, the ease and unaffected humor of his dialogue and the delightful simplicity of his style that *The Compleat Angler* owes its charm.

WALTZ, *wawlts,* a dance of Bohemian origin, executed with a rapid whirling motion, the gentleman having his arm round his partner's waist. The music is written in triple time and consists of phrases of eight or sixteen bars. Several of these phrases are now usually united, to prevent monotony. Johann Strauss and his son of the same name are the most noted composers of waltzes. The *valse à deux temps* is a form of waltz in which two steps are made to each bar of three beats. *Classical waltzes* are musical compositions in waltz form, not intended for dance tunes. Of this style the composer Chopin is the greatest master.

WAMPANOAG, *wom pa no'ag,* a tribe of Algonquian Indians who once occupied the lands east of Narragansett Bay, as far north as Massachusetts. Their number was reduced from 30,000 to barely 1,000 by a fearful epidemic, and a subsequent war with the whites resulted in their complete destruction. Massasoit and his son Philip were famous men of the tribe. See MASSASOIT; KING PHILIP.

WAMPUM, *wom'pum,* white and purple shell beads used for ornament and circulated in colonial days as money among Indian tribes east of the Mississippi. Because of the fixed value given to wampum strings, they came to be accepted by the New England colonists in exchange for their own coins. In some localities six wampum beads equaled a penny. It was the custom of the Indians to weave wampum beads into belts, in such a manner that the figures formed permanent records. Few transactions of any sort were considered complete without the passing of the belts, and wampum records were invariably used in the ratification of treaties. Many wampum belts of historic importance are preserved in the state archives at Albany, New York.

WANAMAKER, *wahn'a ma kur,* JOHN (1838–), an American merchant, capitalist and philanthropist. He was born in Philadelphia, Pa., and there received a common school education and began his business career as errand boy in a book store; later he was a salesman, and in 1861 he established a clothing house, which he enlarged into a general department store in 1876. In 1896 he opened a branch in New York City.

He helped to organize the Christian Commission, which assisted the soldiers during the Civil War; was chairman of several relief committees, and was prominent in the management of the Centennial Exposition. Wanamaker was appointed Postmaster-General in 1889 and performed his duties with energy and administrative ability. He also took great interest in religious work and actively supported the Young Men's Christian Association. As one of the founders of the Presbyterian Hospital and Bethany Dispensary, as originator and president of the first Penny Savings Bank and as a donor to numerous charities he has been one of the most influential men of his time.

WANDERING JEW. A legend, well known in almost all parts of the Christian world, says that while Christ was on his way to Calvary, bearing his cross, he was mocked by a Jew, who told him not to rest, but to hurry on with his burden. In reply, Christ said, "I go, but thou shalt tarry till I come." In consequence, the man has continued since to wander about the earth. He passes through his lifetime like any ordinary man, till he reaches one hundred years, and then he suffers a terrible sickness, after which he comes forth again young. This legend has been the subject of many literary works in prose, poetry and the drama. The most notable novel is *The Wandering Jew* by Eugene Sue.

WANDERING JEW, a creeping plant with glossy leaves having a silvery sheen and often a purplish cast. It grows in almost

any soil, and even in water; and the persistency with which it lives and its manner of growth are responsible for the name. The plant grows and spreads rapidly and is used to advantage in hanging baskets and along the sides of window boxes. In the warmer of the temperate climates the plants live out of doors and often attain a length of several yards.

WAP'ITI. See ELK.

WAR, *wawr,* a contest between nations or states (international war), or between parties in the same state (civil war), carried on by force of arms. It usually arises in the first case from disputes about territorial possessions and frontiers, unjust dealings with the subjects of one state by another, economic competition and oppression, questions of race and sentiment, jealousy of military prestige or mere lust of conquest. In the second case, it is owing to the claims of rival contenders for supreme power in the state, or to attempts to establish some important point connected with civil, religious or political liberty. In all cases the aim of each contending party is to overthrow or weaken the enemy, by the defeat or dispersion of his army or navy, by the occupation of important parts of his country, such as the capital or principal administrative and commercial centers, or by the ruin of his commerce, thus cutting off his sources of recuperation in men, money and material.

When war is carried into the territory of a hitherto friendly power, it is called an *aggressive,* or *offensive, war;* and when carried on to resist such aggression, it is called *defensive.* Previous to the outbreak of hostilities between states, the power taking the initiatory step may issue a *declaration of war,* which now usually takes the form of an explanatory manifesto, addressed to neutral governments (see WAR, DECLARATION OF).

During the progress of the struggle, certain laws, usages or rights of war have come to be generally recognized; such laws permit the destruction or capture of armed enemies, the destruction of property likely to be serviceable to them, the stoppage of their channels of traffic and the appropriation of everything in an enemy's country necessary for the support and subsistence of the invading army. On the other hand, though an enemy may be starved into surrender, wounding, except in battle, mutilation and all cruel and wanton devastation are contrary to the rules of war, as are also bombarding an unprotected town, the use of poison and the employment of torture to extort information from an enemy. Works of art and the industries of peace are usually considered as exempt from destruction. The World War, however, showed that in actual conflict all these rules may be disregarded by a wanton adversary. A remorseless and cruel nation breaks every humane rule, and its opponents may retort with "reprisals." The supreme problem before civilization at the present time is not the mitigation, but the abolition of war.

When two nations are at war and it becomes necessary for them to communicate, it is customary to request the services of the embassies of some neutral powers, and the belligerents themselves do not meet until preliminary arrangements have been made by the neutrals; as, for instance, in the Russo-Japanese War, negotiations were carried on by the government of the United States. While terms of peace are being considered, or when for any reason the belligerents wish to meet, an *armistice,* or *truce,* is declared, during which there is a cessation of hostilities.

If one nation completely conquers another, the war ceases; though many matters must subsequently be settled by a *treaty* or by *grant.* The peace treaty of 1919 is the latest of a long series of agreements that have followed wars since civilization began. While as a whole treaties are based on the assumption that there will always be other wars, some of their provisions usually recognize the possibility of preventing war through international organization and coöperation.

Related Articles. Consult the following titles for additional information:
Army Navy
International Law Neutrality

WAR, DECLARATION OF, a formal announcement by one nation of its intention to begin hostilities against another, or a statement recognizing the existence of a state of war between the two nations. Under modern conditions, with such facilities for rapid communication as the telephone, the wireless telegraph, the ocean cable, etc., actual warfare is preceded by negotiations of longer or shorter duration. It sometimes happens that actual hostilities commence before the formal declaration of war, as in case of the Russo-Japanese War of 1904–1905. A more common procedure is for one nation to send

an ultimatum to the other, setting a definite time for a reply. In 1914, for example, Great Britain sent an ultimatum to Germany on August 4, demanding a reply to its request that Belgian neutrality be respected, and requiring an answer by midnight of the same day. Germany's failure to reply was followed by a war declaration on the part of Great Britain. The war resolution by which the United States entered the World War was a statement that war existed between the two countries because of illegal acts on the part of Germany. See WAR; WORLD WAR.

WAR, DEPARTMENT OF, that one of the executive departments of a government which has to do primarily with military affairs. The chief of the department in the United States is the Secretary of War, who is a member of the President's Cabinet. He carries out the orders of the President, who is commander in chief of the army. The War Department consists of a number of different bureaus, over the chiefs of which the Secretary has general control. The affairs of the War Department, however, are not confined strictly to military matters, for it exercises control over pensions, sea coast forts, river and harbor improvements, the military academy and the government of island possessions which require military supervision. The principal bureau chiefs are the adjutant-general, the inspector-general, the judge-advocate-general, the quartermaster-general, the commissary-general, the sergeant-general, the paymaster-general and the chiefs of ordnance, signal office, engineers and pensions. The department was created by act of Congress in 1789.

WARBLERS, a family of tiny, insect-eating birds, found throughout the western continent, about seventy species of which reach the United States. Their migration northward is made with great regularity, and in May and early June they are commonly observed everywhere in the Northern states. In nesting, however, most species seek the deep woods, some penetrating as far northward as the Hudson Bay and Yukon regions. Nearly all spend the winter in the tropics.

Some of the better known species of warblers are the *yellow warbler,* or *summer yellow bird,* which remains about Northern homes and parks throughout the summer; the *black and white warbler,* which creeps about the branches of trees in early spring; the *myrtle warbler,* marked with four yellow patches on head, rump and wing; the *black-throated green* and the *black-throated blue warblers,* the *chat,* the *American redstart* and the *oven bird.* Some warblers have fine singing voices, but the greater number have only weak, lisping notes. Their nests are usually cup-shaped, woven of twigs and grasses and placed in trees or bushes. The eggs are from three to five in number.

WARD, a minor who has been placed under a guardian appointed by the courts and who becomes legally responsible for the protection of his rights. The child must obey his guardian; he may not marry without his consent and may not bring suit against him, though in cases of unjust treatment he may file a complaint with the court. In most cases wardship ceases with marriage and always when the ward becomes of legal age. See GUARDIAN.

WARD. See MUNICIPAL GOVERNMENT.

WARD, ARTEMUS. See BROWNE, CHARLES FARRAR.

WARD, ELIZABETH STUART PHELPS (1844–1911), an American author and philanthropist, born at Andover, Mass. Besides lecturing and engaging in work for the advancement of women and for social reforms, she also wrote a number of stories, including *The Gates Ajar* (1868), which passed through twenty editions in the year of its publication, *Beyond the Gates, The Gates Between, Hedged In, The Silent Partner, The Story of Avis, A Singular Life* and, in conjunction with her husband, the Rev. Herbert D. Ward, *Come Forth* and *The Master of the Magicians.*

WARD, MRS. HUMPHRY (1851–), the foremost woman novelist of twentieth-century England. She was born in Tasmania and was reared and educated in England. In 1872 she married Thomas Humphry Ward, a journalist. Matthew Arnold was her uncle.

MRS. HUMPHRY WARD

After writing much for periodicals and publishing two works of fiction, which were not especially noteworthy, she brought out in 1888 *Robert Elsmere,* a novel which became immensely popular and which won the favorable notice

of critics. Then followed *The History of David Grieve, Marcella, The Story of Bessie Costrell, Sir George Tressady, Helbeck of Bannisdale, Eleanor, Lady Rose's Daughter The Marriage of William Ashe, The Case of Richard Meynell, Eltham House, Missing, Elizabeth's Campaign* and *Helena* (1920). The principal criticism passed on Mrs. Ward's novels, especially on her earlier ones, is that the purpose is made too prominent and that in all there is too great similarity of leading characters. But her characters are clearly drawn, her literary execution is excellent and her topics are always vital and timely.

WARD, JOHN QUINCY ADAMS (1830–1910), one of the foremost American sculptors of his day, was born at Urbana, Ohio. Before the Civil War he established himself in New York, and became known for his portrait busts of notable people. His statuette *The Freedman,* made in 1865, was so popular that thousands of copies were sold; his *Indian Hunter,* which also makes a strong popular appeal, was the first piece of statuary erected in Central Park, New York City. *The Good Samaritan,* a group commemorating the discovery of the efficacy of ether as an anaesthetic, is in Boston. Ward's bronze bust of Shakespeare, a seated figure of Horace Greeley and statues of George Washington and Thomas Jefferson are among his finest portrait statuary. Ward was identified with the leading art organizations of his time and labored unremittingly to elevate national ideals in the field of art endeavor.

WARFIELD, DAVID (1866–), an American actor who has achieved the highest success in several character portrayals. He was born at San Francisco and in that city began his stage career at a local theater at the age of twenty-two. He went to New York in 1890; in the ten years following he was connected with the Casino Theater and with Weber and Field's Music Hall. Later attracting the attention of David Belasco, Warfield was starred in *The Auctioneer,* one of his greatest successes. He was equally successful in *The Music Master,* and this placed him in the front rank of American actors. His later performances have been in the leading rôle of *The Return of Peter Grimm* and as "Van der Decken" in the play of the same name, based on the legend of *The Flying Dutchman.* Warfield's impersonation of an eccentric but kindly old gentleman, pathetic and courageous in misfortune, has never been excelled by any American actor.

WAR'NER, CHARLES DUDLEY (1829–1900), an American editor and critic, born at Plainfield, Mass. He received his degree at Hamilton College in 1852, was admitted to the bar and for a time practiced law in Chicago. Entering journalism, he became, in 1860, editor of the Hartford *Press* and later of the *Courant.* As correspondent of American papers he made an extensive tour of Europe, and on his return, in 1884, he became one of the editors of *Harper's Magazine,* to which he contributed until his death. The first book by which he attained prominence was *My Summer in a Garden,* a volume of sketches, which was followed by *Backlog Studies, Being a Boy* and *As We Were Saying.* Among his other works are *The Gilded Age,* a drama in which he collaborated with Samuel L. Clemens, and *A Little Journey in the World,* a novel with a moral purpose. He edited the "American Men of Letters" series and *A Library of the World's Best Literature.*

WARNER, SETH (1743–1784), an American soldier, one of the leaders of the Green Mountain Boys, who opposed New York's claim to the New Hampshire grants. He was elected lieutenant-colonel of the Green Mountain Boys in 1775, and the following year was appointed colonel of the continental regiment. He received a colonel's commission for the part he took in the capture of Crown Point. He was in command at the Battle of Hubbardton and rendered efficient service in the Battle of Bennington. In 1782 he retired on account of ill health.

WAR OF 1812, the name given to the struggle between the United States and Great Britain in the years 1812–1814. The general cause of the war was the attitude of Great Britain in relation to American shipping. Its claims to the right to board and search American vessels for the purpose of impressing British citizens, found in their crews, into the British service; its decrees and orders to the detriment of American commerce; its disregard of American protests, which had been a cause for grievance to the Americans for many years, at last compelled them to attempt to secure reparation by force. The same haughty actions regarding American commerce had been taken by France, and it was long a question as to which of the

two powers the United States would fight first; but the proximity of Canada, which seemed to offer an attractive field for conquest, and the old ill-feeling toward England, resulting from the Revolution, finally caused the declaration of war against Great Britain, on June 18, 1812. Five days later the British government withdrew the "Orders in Council," which had been probably the most objectionable features of the British policy, since they established a paper blockade of European ports and practically excluded American commerce from the seas.

At the outset the land forces of the United States made little headway. Great Britain, with her vastly superior resources, was prepared for war, having been at war with France for many years, while the United States government had shown a shameful lack of appreciation of the dangers attending the new republic and had allowed the navy and war departments to deteriorate almost out of existence. The first military movement was that of General Hull, who invaded Canada with two thousand men, but soon retreated before an inferior force under General Brock and surrendered at Detroit, August 16. In October of the same year, General Van Rensselaer made another invasion of Canada near Niagara Falls, and after the Battle of Queenstown, in which the British general, Brock, was mortally wounded, the Americans were again driven back with great loss. Meantime, on the sea the United States vessels had held their own. The *Constitution* had captured the British frigate *Guerriere* (August 19). The *Wasp,* after a sharp battle, took the *Frolic.* The *United States* captured the *Macedonian,* and in December the *Constitution* compelled the surrender of the frigate *Zava.*

Of the American navy it can be said that at the beginning of the war there were practically no war vessels owned by the government. So badly in need of a naval arm was the country that privateers (which see) were licensed. A few naval vessels were assembled; these in 1812 and 1813 gave so good an account of themselves in action that the naval history of the war was remarkable. American valor on the sea made forever memorable such names as the *Constitution* ("Old Ironsides"), the *Wasp* and others scarcely less notable.

In the spring of 1813 General Dearborn, who had been placed at the head of affairs in the Northwest, invaded Canada for the third time, with an army of 1,700 men, and captured York (Toronto). He was relieved by Generals Wilkinson and Hampton, who made an attempt to take Montreal, but without success. In May an advance of the British into New York State was repulsed at Sackett's Harbor, and in September Commodore Perry fought the famous Battle of Lake Erie, by which he captured the most important British fleet upon the Great Lakes. This victory enabled General Harrison to invade Canada. There he defeated General Proctor, in the Battle of the Thames.

In 1814 General Jacob Brown again invaded Canada, captured the British Fort Erie and defeated the force under General Riall at Chippewa. Then followed the Battle of Lundy's Lane and the withdrawal of the Americans to Fort Erie, where they were

MAP OF MAIN OPERATIONS

besieged. In the following September, General Provost led 14,000 men in an invasion of New York, by way of Lake Champlain. The fleet which he had got together was defeated near Plattsburg by an American fleet under Commodore McDonough, while the land force was also repulsed. At about the same time, the British fleet ascended Chesapeake Bay, defeated the hastily sum-

moned American militia at Bladensburg, entered Washington and sacked the government buildings, in retaliation for the sack of York at its capture.

Meanwhile, General Andrew Jackson had been fighting the Creek Indians in the extreme South and had gathered together an army of Kentucky and Tennessee frontiersmen. In January, 1815 this force was confronted by an army sent direct from England, under General Pakenham, and consisting of the veterans of Wellington's campaign against Napoleon. The result was the famous Battle of New Orleans.

On the sea the Americans continued to gain the upper hand, though the *Chesapeake* was captured by the *Shannon,* and other small American vessels were taken. Probably the most memorable event upon the sea during this period was the famous cruise of the American frigate *Essex,* which, after a long and brilliant career against British merchantmen, was compelled to surrender to the *Phoebe* and the *Cherub* in the Pacific Ocean, March 28, 1814. The very month in which the treaty of peace was signed, December, 1814, the Federalists of New England declared their opposition to the war. The Treaty of Ghent provided for the restoration of all lands captured by either side and for a commission to determine the boundary between the United States and Canada. It did not provide for the withdrawal of the British claims regarding right of search, the paper blockade and the laws of neutrality. These practices had already been discontinued by the British, on demand of their own merchants, and were never revived.

Related Articles. Consult the following titles for additional information:

Blockade
Brock, Sir Isaac
Champlain, Lake
Constitution (ship)
Continental System
Embargo
Erie, Lake, Battle of
Ghent, Treaty of
Hartford Convention
Hull, William
Jackson, Andrew
Lawrence, James
Lundy's Lane, Battle of
Milan Decree
New Orleans, Battle of
Perry, Oliver H.
Queenston Heights, Battle of
Raisin River, Massacre of
Star-Spangled Banner
Thames River, Battle of the
Tippecanoe, Battle of
United States (history)

WARRANT, a writ issued by any qualified court officer directing a constable or sheriff to arrest the person named therein and bring him before the official issuing the warrant. A warrant is usually issued upon the oath of a complaining witness as to the guilt of the person concerned. Arrests without a warrant are illegal, except in time of public danger, or when an overt act is witnessed by a peace officer.

WARREN, Joseph (1741–1775), an American patriot, born at Roxbury Mass. He was graduated from Harvard College and became a physician at Boston and a leading figure in Massachusetts political movements, contributing with voice and pen to the cause of patriotism. He drew up the "Suffolk resolves," the most radical expression of the American position with respect to British oppression, and in the following year, 1775, was elected president of the provincial congress of Massachusetts. Although the rank of major-general of Massachusetts forces had been conferred on him, and he was offered chief command at Bunker Hill, he took his place as a volunteer and was killed in the fight of June 17. A monument in his memory erected in 1794, on the spot where he fell, was later replaced by the Bunker Hill Monument (which see).

WAR'REN, Ohio, the county seat of Trumbull County, fifty-two miles southeast of Cleveland, on the Erie, the Baltimore & Ohio and the Pennsylvania railroads. It is said to be the second city in the United States in the manufacture of electric lamps. Other manufactures are fire extinguishers, automobiles, storage tanks, steel ranges, shovels, bath tubs, boilers and furniture. It has a Federal building, a public library and a hospital. The town was first settled in 1802 and was incorporated in 1834. Population, 1910, 11,129; in 1917, 13,308 (Federal estimate).

WAR'REN, Pa., the county seat of Warren County, sixty-six miles southeast of Erie, on the Allegheny River and on the Pennsylvania and the New York Central railroads. It is surrounded by a rich gas and oil district, and is the center of large petroleum industries. There are also boiler and machine shops and furniture factories. The state hospital for the insane is here. Warren was settled in 1780, and was incorporated as a borough in 1832. Population, 1910, 11,140; in 1917, 15,083 (Federal estimate).

WAR'SAW, Poland, capital and largest city of the republic, is situated on the left bank of the Vistula, 625 miles south of Petrograd and 320 miles east of Berlin. The city is built upon a hill, which slopes toward the river, and is connected with its suburb, Praga, by an iron bridge. The old

part of the town is characterized by narrow winding streets and quaint buildings, erected during the Middle Ages. It is enclosed by a wall, which is entered through a number of gates. Around this part of the town are the suburbs, which are of a more modern structure. In Castle Square stands the castle of the old Polish kings. The Roman Catholic Cathedral of Saint Johns, dating from the thirteenth century; the Church of the Holy Virgin, dating from the fifteenth century, and the Church of Saint Anne, of about the same date, are also of interest. The city contains a number of public monuments, among them an obelisk erected to the memory of the Polish generals who fell in 1830. The educational institutions include a university, an observatory, a polytechnic institute, a conservatory of music and a museum of fine arts.

Warsaw is an important industrial center, and its leading manufactures include machinery, chemicals, food products, matches, spirits, tobacco, and boots and shoes. The city itself is not fortified, but protecting it are some of the greatest fortresses in the world. These, with the city itself, were taken by the Germans in 1915 during the World War. After the liberation of Poland at the close of the war, Warsaw became the capital of the newly-organized republic (see POLAND; WORLD WAR). Population, 1914, about 909,000.

WARSHIP. See NAVY; SUBMARINE; TORPEDO BOAT.

WART, an excrescence of the skin caused by hardening of the papillae. Warts are usually the result of some form of irritation, and appear most commonly on the hands of children. They may disappear after a time, or may persist through life. There have been many superstitious beliefs as to methods of removing warts, but the only reliable way is that of having them cauterized by a physician, or treated with lactic acid or a similar chemical. Senile warts result from a breaking down of the skin, favored by irritation or lack of cleanliness, and are usually found on the back, neck and arms.

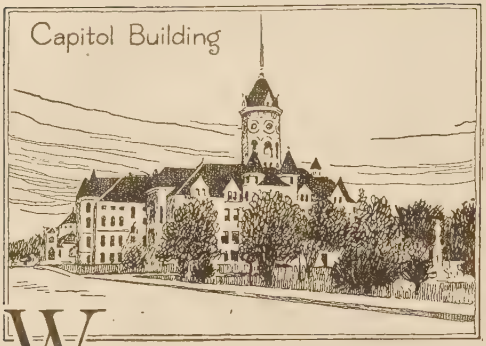
WART HOG, a wild pig, native to Africa. It stands about three feet high, having rather long legs. The face is rendered extremely hideous by large tusks and wart-like protuberances under the eyes and at each side of the huge snout. The coarse hair, short on the rest of the body, is long on the back and hangs in a mane on the neck. These hogs roam in small groups in search of food, and are destructive to crops. There are two principal species, one in Abyssinia and Somaliland, and the other in South Africa.

WAR'WICK, R. I., in Kent County, five miles south of Providence, on Narragansett and Cowesett bays, on the Pawtucket and Providence rivers and on the New York, New Haven & Hartford Railroad. It is an important industrial center and contains cotton factories, foundries, machine shops and other establishments. The place was settled in 1642 and was called Shawomet until named in honor of the Earl of Warwick, in 1648. Nathaniel Greene was born in the town. Population, 1910, 26,629; in 1917, 30,507 (Federal estimate).

WARWICK, RICHARD NEVILLE, Earl of, called the "king-maker" (1428–1471), an English soldier and statesman. He was the son of the Earl of Salisbury and became Earl of Warwick after marrying the heiress of the Warwick title and estates. Taking the Yorkist side in the Wars of the Roses, he was the main instrument in placing Edward IV on the throne in 1461, in place of Henry VI, and he became the most powerful nobleman in the kingdom. He quarreled with Edward, however, on account of the latter's marriage, went over to Henry's side and was able to place him again on the throne, but was defeated and slain at the Battle of Barnet. He is the "last of the barons" in Bulwer-Lytton's novel of that title.

WASATCH, *waw'satch*, **MOUNTAINS**, a range belonging to the Rocky Mountain system. It extends from Southeastern Idaho to Southwestern Utah, forming the eastern boundary of the Great Basin in which lies the Great Salt Lake. The mountains rise abruptly from the plain and reach an average height of 10,000 feet. The highest peak, Mount Belknap, reaches 12,000 feet above sea level. The peaks, covered with perpetual snow, are the source of numerous streams, and the region is broken by canyons. Below the snow-line dense pine forests cover the slopes. Coal, iron and silver are mined.

WASHBURN COLLEGE, a Congregational institution of higher learning, established in 1865 at Topeka, Kansas. There is a school of liberal arts and instruction is also given in engineering and law. There is also a preparatory school. The attendance is 850; faculty, 80.



WASHINGTON, a prosperous and progressive state of the American Union, situated in the extreme northwestern part of the country, south of the international boundary and on the Pacific coast. Its popular name, the EVERGREEN STATE, refers to its wealth of pine forests. About seventy per cent of the surface is forest-covered, and in the annual production of lumber Washington is the leading state in the Union. The rhododendron is its flower emblem.

Location and Area. The state is bounded on the north by the Canadian province of British Columbia, the forty-ninth parallel forming the line between the two divisions. Extending into the northwestern part of the state is the irregular, much-branching inlet, Puget Sound, which is connected with the open ocean by the straits of Juan de Fuca and Georgia. Between these straits lies the island of Vancouver, which is wholly Canadian territory, though it extends south of the international boundary. Washington touches the northern extension of Idaho on the east, and along most of its southern border it is separated from Oregon by the Columbia River.

With an area of 69,127 square miles, of which 2,291 square miles are water the state is the nineteenth in size, having but 293 square miles less than the state of Missouri. Washington is about two-thirds the size of Oregon, its southern neighbor, and if placed on the province to the north, would occupy less than one-fifth of that area.

People and Cities. In 1910 the population of the state was 1,141,990, an average density of 17.1 to the square mile. Washington then ranked thirtieth in population. On July 1, 1918, according to the Federal estimates, the population was 1,660,578.

Of the foreign-born groups, who number in all about 257,000, the most prominent numerically are Canadians, Swedes, Germans, English and Irish. The state has eighteen Indian reservations, with a total population of about 11,000. There are also large numbers of Japanese, Chinese and negroes.

The largest religious bodies are the Roman Catholic, Methodist, Presbyterian, Lutheran, Baptist and Congregationalist denominations.

According to Federal estimates for 1917, Washington has ten municipalities with populations exceeding 12,000. There are three large cities—Seattle (366,445), Spokane (157,656) and Tacoma (117,446). Other important towns are Everett, Bellingham, Walla Walla and Olympia, the capital.

Surface and Drainage. The Cascade Mountains cross the state from north to south about 120 miles east of the coast, and divide it into two unequal parts, Eastern Washington and Western Washington. These mountains form the chief physiographic feature of the state and have a mean elevation of about 8,000 feet. Their eastern slope rises gradually from the interior plateau, but the western slope is steep and broken. The range contains a number of lofty peaks whose summits are covered with perpetual snow. The most noted among these are Mount Rainier, 14,408 feet, now enclosed in a national park, Mount Adams, 12,307 feet, Mount Baker, 10,827 feet and Mount Saint Helens, 10,000 feet. Eastern Washington, which includes nearly two-thirds of the state, contains the Columbia River Basin, which is by far the largest natural division of surface within the state. Within this basin are the great irrigated and grain-growing districts and a number of fertile valleys. In the southeastern part the Blue Mountains rise to an altitude of about 6,000 feet.

Western Washington is naturally divided into three physiographic regions—the Puget Sound Basin, including the territory between the Olympic and Cascade mountains, and surrounding the great inland sea, Puget Sound; the Olympic Peninsula, including that portion of the state containing the Olympic Mountains and the region extending from them to the Pacific, and the southwestern division, which occupies the region fronting on the Columbia River and Pacific Ocean and extending northward until it meets the Olympic Peninsula. The Olympic

Mountains are the northern extension of the Coast Range.

The eastern section of the state, or Eastern Washington, is drained entirely by the Columbia River and its tributaries. This river enters the state near the northeastern corner and flows south by west then westward in an irregular course, then southward and southeastward until it reaches the southern boundary, when it makes a sharp turn to the west and pursues its course to the Pacific. These changes in direction form what is known as the Great Bend in the Columbia River, and this is for a part of the way the western boundary of the plateau. The chief tributaries of the Columbia are Clark Fork, from Idaho; the Snake, which flows through the southeastern corner of the state; the Spokane, the Okanogan, the Metahow, the Wenatchee and the Yakima. Western Washington is drained into Puget Sound and the Pacific. In this section all of the rivers are short and comparatively unimportant, the most important being the Cowlitz, flowing southward into the Columbia, the Chehalis, flowing directly into the Pacific, and the Skagit, which enters Puget Sound. The state contains a number of mountain lakes, the largest being Lake Chelan.

Climate. The Cascade Mountains divide the state into two climatic regions. Eastern Washington is characterized by hot summers, cold though not severe winters and light rainfalls, the annual average being about sixteen inches. In many sections irrigation is necessary to successful agriculture. Except upon the high altitudes there are many hot days during the summer. During the winter there are heavy falls of snow, which are welcomed by the farmers, because as the snow on the lowlands melts, it is absorbed by the soil, and that upon the mountains during the summer feeds the streams which supply water for irrigation. The climate of Western Washington is mild and moist. The prevailing westerlies, blowing moisture-laden from the sea, strike the cool slopes of the mountains and have their moisture condensed. West of the Cascades the annual rainfall varies from twenty to 132 inches. The winters are mild and the summers are free from extreme heat.

Mineral Resources. There are extensive deposits of coal in the Puget Sound Basin, notably in King, Pierce, Kittitas, Lewis, Whatcom and Thurston counties. These are now well developed, and about 3,000,000 tons of coal are mined annually. Both bituminous and lignite varieties are found. The coal deposits of Washington are the only ones of any great extent on the Pacific coast.

Veins of ore producing gold, silver, copper, lead, quicksilver and a number of rare metals occur throughout the mountainous regions. Gold and silver are mined in Whatcom, Skagit, Snohomish, King, Pierce, Lewis, Skamania, Cowlitz, Okanogan, Chelan, Kittitas, Yakima, Klickitat, Ferry and Stevens counties. Iron ore, and marble, granite, onyx, serpentine, limestone and sandstone occur in large quantities. Beds of fire clay, kaolin, talc and asbestos are among the valuable resources of the state. The value of the total annual output is about $12,000,000.

Fisheries. The waters of Puget Sound, the Columbia River and the indentations along the Pacific coast abound in excellent food-fish, and in the lakes and streams are found large quantities of fresh-water fish. The most important branch of the fisheries is catching and curing salmon (see SALMON). Second in point of value are the halibut fisheries. Large quantities of oysters, shrimps, clams and cod are also taken. In value of products of the fisheries Washington ranks fourth among the states.

Agriculture. Washington has a wide variety of soils. On the uplands of Eastern Washington wheat and other cereals are raised in large quantities. In the diked lands along Puget Sound oats are raised, and in the southeastern part barley constitutes the important crop. Rye, buckwheat and flax are also grown, and in some counties hops are a staple product. Many large irrigated areas east of the mountains are devoted to alfalfa; the state produces nearly 2,000,000 tons of hay annually. Potatoes, beets and other vegetables thrive and yield large returns.

Washington is also becoming one of the most important fruit-growing states of the Union. In the valleys of Eastern Washington there are thousands of orchards, and they are increasing each year in number and extent. This region is especially valuable for the raising of apples, pears, peaches, plums and cherries. In the western part of the state small fruits are raised in large quantities, and grapes are grown upon both sides of the mountains.

The mild winters and excellent pasturage make the raising of live stock profitable, and

large numbers of cattle, horses, sheep and hogs are found. For all of these there is a ready market. Dairying is also profitable and can be practiced under ideal conditions.

Manufactures. Washington has abundant water power and a vast forest area. Because of these conditions, lumbering and its allied industries—the manufacture of doors, sash, shingles and furniture—constitute the leading manufacturing industry, in which over 200,000 men are employed. Lumber mills are quite generally distributed through the forest regions, but the most extensive establishments are found in the large forests of Western Washington. The total annual value of the output is about $90,000,000, which is greater than that of any other state.

The products of the flour and grist mills are second in value, the most important commodity of the industry being white flour. Slaughtering and meat packing, the canning and curing of fish, printing and publishing and railroad-shop construction and repair are all prosperous lines of activity. Seattle, Tacoma and other ports have developed as centers of shipbuilding, especially after the outbreak of the World War. Seattle is the chief manufacturing city of the state, with Tacoma, Everett, Bellingham, Aberdeen, Walla Walla and Yakima following.

The mineral resources have given rise to various other industries.

In the Puget Sound Basin large quantities of lime are produced. Granite is quarried in Snohomish and Spokane counties. In other localities valuable sandstone occurs, and onyx of great variety and beauty is quarried in Stevens County. In King County are factories for the manufacture of brick, tile, terra cotta, stoneware and sewer pipe. Portland cement is produced in Skagit County, and iron and steel in Jefferson County.

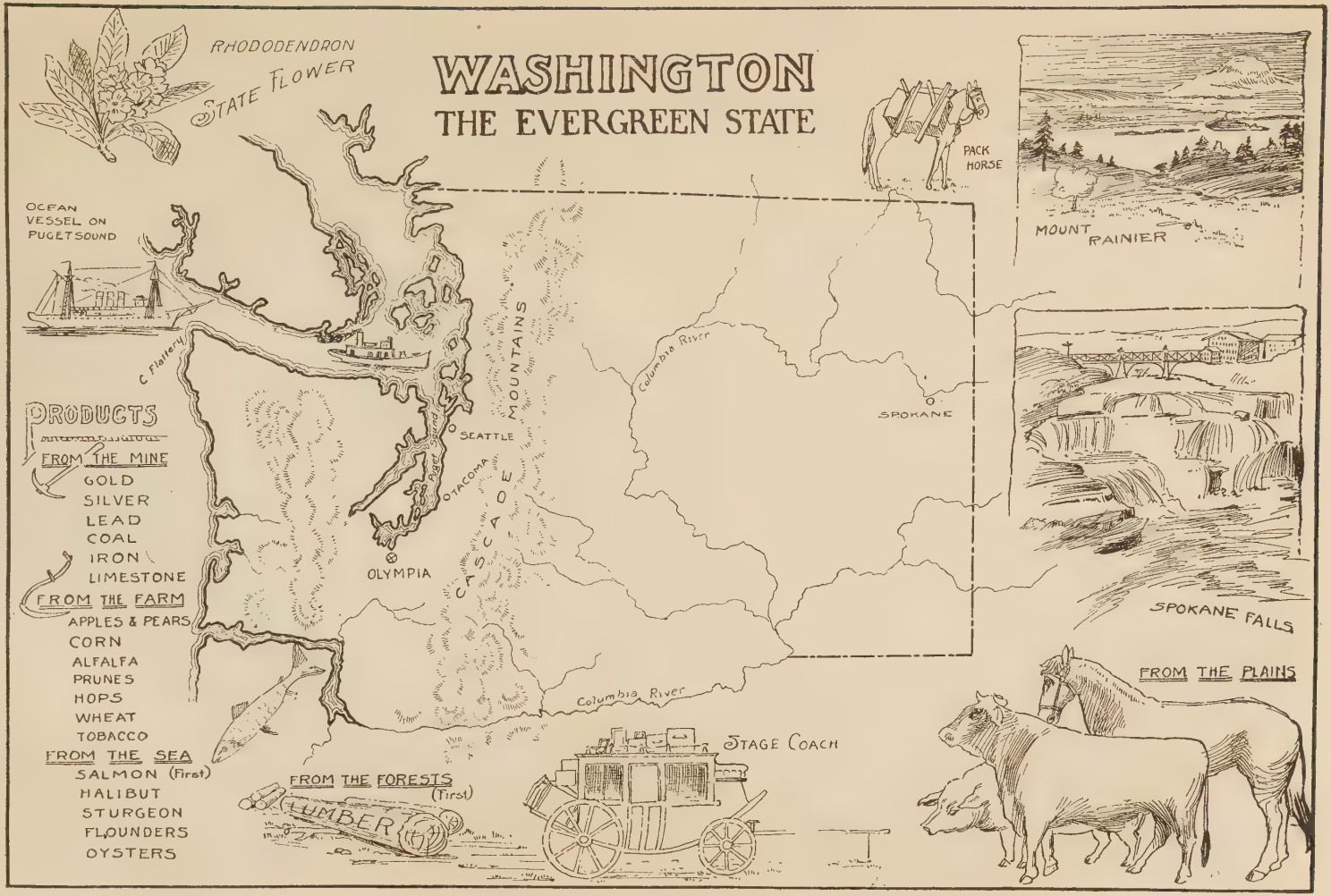
Transportation. Puget Sound and the Pacific Ocean have a coast line exceeding 2,000 miles in extent. The largest ocean ships can sail on the Sound as far as Seattle and Tacoma, which are the chief harbors of the state. Three transcontinental lines of railway cross the state from east to west. Railway lines extend north and south from the great centers of trade on Puget Sound, and connect all important cities and towns in the state and with cities in British Columbia. The most important roads are the Northern Pacific, the Oregon & Washington, the Great Northern, the Chicago, Milwaukee & Saint Paul and the Spokane, Portland & Seattle. The total mileage of the state is about 7,000.

Government. The legislature consists of a house of representatives, that cannot exceed ninety-nine members or be less than sixty-three, and a senate, whose number cannot exceed one-half, or be less than one-third of the number of representatives. The representatives are elected for two years, and the senators are elected for four years. The legislature meets biennially, and the regular sessions are limited to sixty days. The executive department consists of a governor, a lieutenant-governor, a secretary of state, a treasurer, an auditor, an attorney-general, a superintendent of public instruction and a commissioner of public lands, elected for four years. The courts consist of a supreme court of nine judges, elected for six years, and a superior court in each county, presided over by a judge elected for four years. Women and men vote on equal terms.

Education. The public schools are under the direction of the superintendent of public instruction and a board of education. The schools are organized on the district plan, and each district must maintain a school for at least five months in the year. Education is compulsory between the ages of eight and fifteen. The school fund is derived from state and local taxes and from income from the permanent fund derived from the sale and lease of school lands. The state university is at Seattle, and normal schools are maintained at Bellingham, Cheney and Ellensburg. The state agricultural college is at Pullman. A number of schools are maintained by religious denominations. Among these are Gonzaga College, at Spokane, and Whitman College, at Walla Walla.

Institutions. The schools for the deaf and the blind are at Vancouver. The hospitals for the insane are at Fort Steilacoom, Sedro Woolley and Medical Lake, and there is a soldiers' home at Orting and a veterans' home at Port Orchard. The penal institutions consist of the penitentiary at Walla Walla and the reformatory at Monroe. The state training school is located at Chehalis.

History. For early history, see OREGON, subhead *History*. The territory of Washington was separated from Oregon in 1853, and soon afterward the discovery of gold led to an influx of settlers, which in turn induced


RHODODENDRON
STATE FLOWER
WASHINGTON
THE EVERGREEN STATE
PACK HORSE
MOUNT RAINIER
OCEAN VESSEL ON PUGET SOUND
C. Flattery
Puget Sound
SEATTLE
TACOMA
OLYMPIA
CASCADE MOUNTAINS
Columbia River
SPOKANE
SPOKANE FALLS
PRODUCTS
FROM THE MINE
GOLD
SILVER
LEAD
COAL
IRON
LIMESTONE
FROM THE FARM
APPLES & PEARS
CORN
ALFALFA
PRUNES
HOPS
WHEAT
TOBACCO
FROM THE SEA
SALMON (First)
HALIBUT
STURGEON
FLOUNDERS
OYSTERS
FROM THE FORESTS (First)
LUMBER
STAGE COACH
FROM THE PLAINS

Items of Interest on Washington

Three-fifths of the shingles manufactured in the United States are made in Washington.

The area of the national forest lands is nearly 10,000 acres.

The northern boundary of the state was fixed by treaty in 1846. In the Presidential campaign of 1844 the popular slogan of the Democrats, "Fifty-four forty or fight," had reference to this boundary.

Girls and boys between fifteen and sixteen who are unemployed are compelled to attend school.

Between 1900 and 1910 the population of the state increased 120.4 per cent.

Suffrage was granted women in 1910.

Among the native whites the illiteracy averages but three-tenths of one per cent.

The slopes of the Olympic Mountains have deep gorges and dense forests of pine, and are almost inaccessible.

In Seattle there is the tallest office building in the world outside of New York.

Questions on Washington

Where are the Cascade Mountains?

Of what is the Columbia Plateau composed?

What is the principal drainage system in the state and which are the important tributaries?

How many acres in the national forest reserve?

How do the fisheries rank among the states of the Union?

What is the value of the annual output of minerals?

What are the leading crops?

What is the principal manufacturing industry?

How does the value of its products compare with that of other states?

Name four other important industries.

Why are Spokane, Tacoma and Everett important?

What was meant by the slogan "Fifty-four forty or fight"?

the Indians to plan a massacre, known as the Washington-Oregon War, in 1855. Indian troubles continued to appear from time to time, but the constant increase of white population finally led to the abandonment of the territory by the Indians. After the Civil War, there were violent anti-Chinese agitations, which for a time retarded this territory's growth. Numerous attempts were made to secure statehood, and in 1889 the Omnibus Statehood Bill, admitting the two Dakotas, Montana and Washington, was signed by the President, and Washington became a state. The growth in the population and wealth of Washington since its admission has been uninterrupted. In January, 1916, prohibition went into effect.

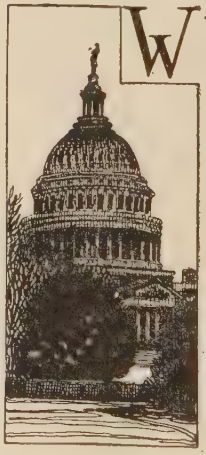
Related Articles. Consult the following titles for additional information:

CITIES

Aberdeen, Bellingham, Everett, Hoquiam, Olympia, Seattle, Spokane, Tacoma, Vancouver, Walla Walla, Yakima

MOUNTAINS AND RIVERS

Cascade Range, Coast Range, Columbia River, Rainier, Mount, Snake River



WASHINGTON, the capital of the United States of America, named for the first President of the republic, and located on a site chosen by him. It lies on the Potomac River, 156 miles from Chesapeake Bay and 185 miles from the Atlantic Ocean, 135 miles southwest of Philadelphia and 228 miles southwest of New York. Chicago is 811 miles northwest, and Atlanta 648 miles southwest. Washington is coextensive with the District of Columbia, which covers an area of about seventy square miles. The southwestern border is formed by the Potomac River, into which flow Rock Creek and the Anacostia River. The latter forms the southeastern boundary. Rock Creek was the western boundary before the city spread to its present limits, but Georgetown and various suburban districts west of the Creek are now legally included within the boundaries of Washington.

The population was 331,069 in 1910; in 1917 it was 369,282, according to a Federal estimate.

WHITE HOUSE, WASHINGTON

Showing western extension, containing President's business offices. A like extension has been added to the east side of the original building.

THE WASHINGTON MONUMENT

Plan of the City. Washington was laid out according to suggestions made by President Washington who employed Pierre Charles L'Enfant, a French civil engineer, to prepare the plans for the proposed city. It is said that L'Enfant rode over the ground with the President and commissioners and grew enthusiastic over the location, deeming it a fit site for the capital of a "mighty empire." Jefferson furnished L'Enfant with plans of the great cities of Europe, but the French engineer, faithful to the inspiration he had received from Versailles, determined to have broad avenues, vistas, streets and parkings, which make Washington truly the "City of Magnificent Distances." The Capitol was located on a hill, which was then a thick wood; the lines of latitude and longitude which marked its center were carefully surveyed, and the streets and avenues were laid from this point with mathematical exactness. It was manifestly the intention that the chief front of the Capitol should be toward the east, and that the public buildings should be placed about that side; but many forces contributed to change this idea, and now the west front, with its great terraces topping the hill and with its magnificent stairways extending far down the side, is worthy to be called the main entrance.

From the middle of the four sides of the site of the Capitol extend four great streets, which separate the city into quarters, known as North West, North East, South West and South East. These four streets are known as North and South Capitol, East Capitol and the Mall. The latter is a beautiful parked area, which takes the place of a West Capitol street. The streets running parallel to East Capitol and the Mall are named, both north and south, for the letters of the alphabet. The streets parallel to North and South Capitol are numbered consecutively east and west. Broad avenues, named for the states, traverse the city from northwest to southeast and from northeast to southwest. All of this will be clearly understood if the reader will study the accompanying map. In locating any place it is necessary, of course, to mention the quarter of the city. When this is done, the location is very definite; for instance, 1850 F Street N. W., would be known to lie between Eighteenth and Nineteenth streets on F Street, in the northwestern part of the city. In the addressing of mail to the North West section, it is customary to omit the letters *N. W.*, but those for the other three sections should always be written.

The North West quarter of the city contains most of the business houses, the finest residence section and most of the government buildings. Pennsylvania Avenue, the principal business street, extends northwest from the Capitol for about a mile to the Treasury building; there it bends sharply to the north and again to the west, here passing in front of the Executive Mansion and the State, War and Navy building; beyond that it turns again to the northwest and extends into Georgetown. Seventh, Ninth and F, N. W., are among the important business streets (see subhead *Parks and Boulevards*).

Washington is connected with Baltimore, New York, Philadelphia, Chicago and other large cities, east and west, by the Baltimore & Ohio, the Pennsylvania and other railroads. All trains run into the magnificent Union Station, north of Capitol Hill. Within the city, transportation is rendered easy by fine systems of electric railways, which traverse all the principal streets and run to the public buildings. Electric railways also connect Washington and Mount Vernon, Arlington and other points of interest.

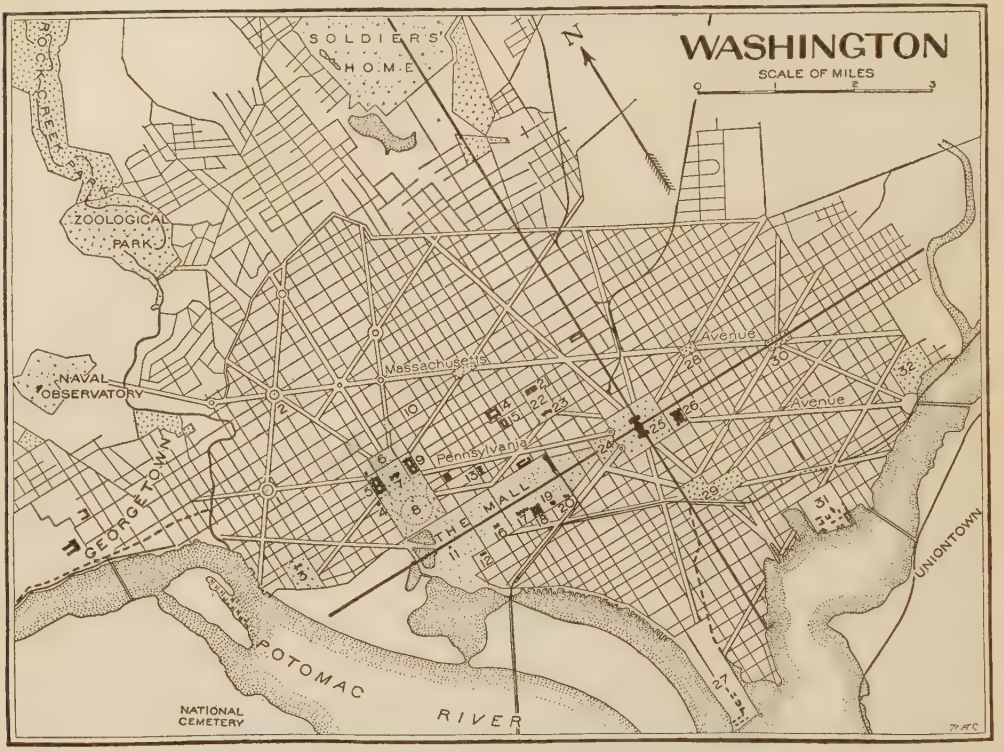
Parks and Boulevards. The park surrounding the Capitol occupies sixteen city blocks, crowning a hill fifty-eight feet high, overlooking the west half of the city. It is laid out with drives and walks, bordered by magnificent trees and beautiful shrubbery, interspersed with beds, in which blossom the flowers of the season. The small ornamental buildings, fountains and statuary lend a peculiar charm to the whole park.

From the west front of the Capitol a person looks down upon the broad Mall, which extends about a mile to the imposing Washington Monument, and is four blocks wide throughout. In the immediate foreground, between the Mall and the Capitol, are the government conservatory and botanical gardens, in which may be seen foreign and native herbs, shrubbery and trees in profusion. Trees, shrubs and plants beautify the walks and drives of the Mall, also, along whose west side are grouped several of the finest public buildings. Running north from the west end of the Mall are the Executive grounds, a magnificent tract, which, with the private gardens of the White House, cover about twenty city squares. In front of the

White House and across Pennsylvania Avenue is Lafayette Square, another exquisite park, adorned with fine statuary.

The intersections of the avenues and streets throughout the city form squares and circles which are public gardens filled with statuary, flowers and shrubs. Other parks in different parts of the city afford resting places for a city filtration plant. In the spring, when the foliage is fresh and the flowers in the parks in full bloom, no more beautiful city is to be found, for the streets are all broad and open and, in the better parts of the city, smoothly paved with asphalt.

Public Buildings and Institutions. Chief of all the public buildings is the Capitol,



MAP AND KEY OF WASHINGTON, D. C.

1. Washington Circle.
2. Dupont Circle.
3. Old Naval Observatory.
4. New Corcoran Art Gallery.
5. State, War and Navy Building
6. Lafayette Square.
7. White House.
8. Executive Grounds.
9. Treasury Department.
10. Franklin Square
11. Washington Monument.
12. Bureau of Printing and Engraving.
13. General Postoffice.
14. Patent Offices.
15. Land Office
16. Agricultural Department Building.
17. Smithsonian Institution.
18. National Museum.
19. Medical Museum.
20. Fish Commission.
21. Pension Office.
22. Judiciary Square
23. City Hall.
24. Botanical Garden.
25. United States Capitol.
26. Library of Congress.
27. Arsenal.
28. Stanton Park.
29. Garfield Park.
30. Lincoln Park.
31. Navy Yard.
32. Congressional Cemetery.

visitors, and out beyond Rock Creek is the great National Zoölogical Park, which in time will become one of the greatest in the world. North of this extends Rock Creek Park, a tract which is preserved in all its natural beauty.

Along the river is Potomac Park, a tract of 737 acres, made up of reclaimed land. The Soldiers' Home, four miles north of the Capitol, is in a beautiful park of 500 acres. To the south of it is McMillan Park, containing which because of its towering dome is conspicuous from any direction in which one approaches the city. The original plans for the Capitol were drawn by Doctor Thornton, a native of the West Indies, but they were redrawn by Stephen H. Hallet; they were followed in the construction of the first building, which little resembled the Capitol of today. The north wing, which contains the Supreme Court rooms, was finished in 1800, but the opposite wing was not ready until

eleven years later. A wooden passageway then connected them. After the British burned the Capitol in 1814, the new central structure was planned, and the original building was completed in 1827, at a cost of not quite $2,500,000. In 1851 the building was remodeled, and in 1856 the erection of the present iron dome was begun. The Capitol as it now stands, together with its approaches, has cost about $26,000,000. The building is 751 feet long and 350 feet in its greatest width, and it covers nearly four acres of ground. Within this imposing building are the two chambers occupied by the Senate and the House of Representatives, rooms for the Supreme Court and apartments for the various committees and officials who meet at the Capitol, and other rooms, made necessary by the great amount of business transacted there. The rotunda, the marble stairways and the dome are decorated with choice statuary and paintings by famous American artists. Most of the paintings depict great events in the nation's history. The famous doors, designed by Randolph Rogers, which guard the east entrance, are ornamented, in high relief, with historic scenes from the life of Columbus. The old Hall of Representatives is now called Statuary Hall, and around its walls are statues of men whose names have become household words in the nation. Most of these statues have been donated by the legislatures of the states to which the men belonged.

To the north, and in a space adjoining the Capitol grounds, is a new, massive granite building, in which are located offices for the Senators, and to the south is another building of white marble, which contains offices for the members of the House of Representatives. These great structures constitute a notable addition to the splendid group of buildings which crown Capitol Hill.

Along the Mall are the buildings of the Fish Commission, the Medical Museum, the great National Museum, the Smithsonian Institution, the Agricultural Department and the Bureau of Engraving and Printing. East of the White House is the low, massive Treasury Department building, while west of it rises the magnificent building of the State, War and Navy Departments. The government Printing Office, the Pension Office and the Interior Department are in different localities of the North West quarter. Near the Capitol, and east of it, is the Library of Congress, one of the most ornate library buildings in existence. Within the library are housed more than 2,390,000 books and pamphlets and over 500,000 pieces of music, photographs and manuscripts. It is open to the public during library hours, but only members of Congress and a few government officials may take books away from the building.

The United States navy yard occupies a large tract of land on the east branch of the Potomac, and the arsenal is on the peninsula where the two rivers join. The old naval observatory was in a park on the Potomac, some distance west of the Executive buildings, but the present observatory is on a reservation north of Georgetown. The government has been generous with its public buildings and institutions, and no adequate idea can be given of them or their contents in any description. Most of the departmental buildings contain museums illustrating their particular activities, and these are open to inspection for the thousands of tourists who visit the city. The government sustains a hospital for the insane and various other hospitals, alms houses and public and charitable institutions. Near the State, War and Navy building is the new building of the Corcoran Art Gallery, a beautiful marble structure, which, with its priceless collection of paintings and statuary, was given to the public by W. W. Corcoran.

Among other interesting edifices are the Pan-American Union building, the Municipal building of the District of Columbia and the Scottish Rite Temple.

Government, Commerce and Industries. The government of the city, which is that of the District of Columbia, is directly in the hands of Congress, which acts through a board of three commissioners appointed by the President. Washington is peculiarly the capital of the United States, and its life and activities are all controlled by national influences. It is the official residence of the President, the members of the Cabinet, members of both houses of Congress and the host of government employes who work in the various offices and departments. When Congress is in session, the whole city is permeated by its influence, and all its industries are affected. There are few manufactures of any importance, and little commerce is carried on with outside cities. The business is almost entirely a retail trade with the people who live in the city. Naturally, the shifting population

creates a demand for hotels, and they are to be found in great numbers, ranging from the lavish new buildings of the region east of the Executive Mansion to simple, inexpensive hotels and boarding houses, scattered everywhere throughout the city.

Educational Institutions. Washington is a great educational center. It has an excellent public school system, which has the distinction of having been organized in 1800 under a board of trustees of which Thomas Jefferson was the first president.

The leading universities of the capital are Georgetown University, George Washington University, the Catholic University, with its affiliated colleges of the religious orders, and Howard University, an institute for colored youth. On a commanding site near the city are the buildings of the American University established by the Methodist Church.

Supplementing the universities are the great scientific bureaus and institutions for research maintained by the government, such as the Bureau of Fisheries, the Bureau of Standards, the Geological Survey, the Bureau of Labor, the scientific bureaus of the Department of Agriculture, the Bureau of Education, the Army Medical Museum, the National Museum, the Library of Congress and a large number of small libraries connected with various departments of the government.

The Smithsonian Institution, founded by James Smithson, an Englishman, who gave half a million dollars for its establishment, and the more recent Carnegie Institution, with an endowment of $10,000,000, are the leading private foundations for the advancement of knowledge.

The capital thus affords opportunities for advanced students, especially, in law, medicine, political economy or scientific research, such as are found in few other cities.

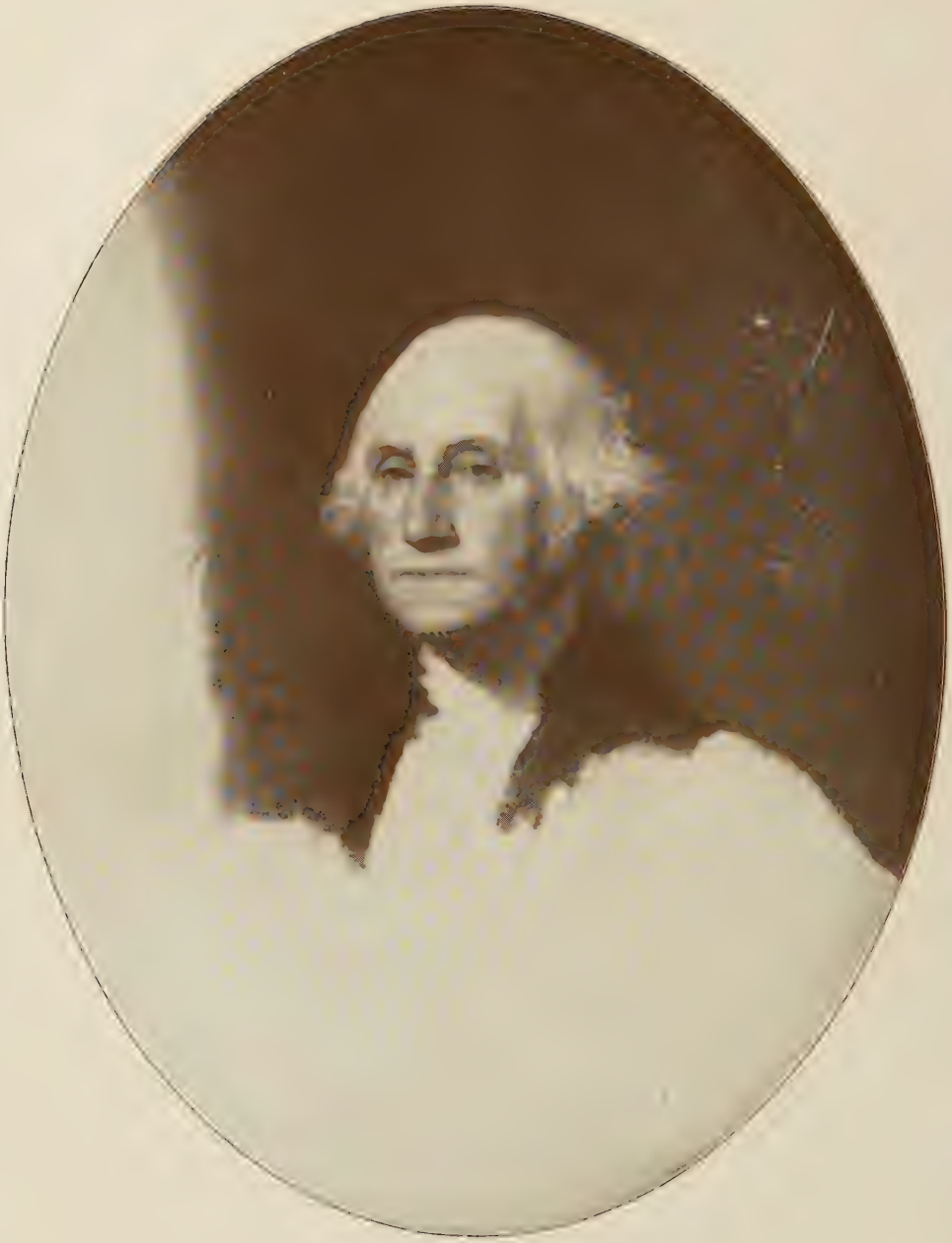
History. Washington enjoys the distinction of having been designed and built for the capital of a great nation. Rome, London, Paris and Berlin grew out of the national conditions surrounding them and became the capitals of great empires, but the capital of the United States was located in a region sparsely populated and almost wholly wild; it was built from plans that were created before any city was in existence there. The site was selected by the great President whose name was given the city, and he watched over its early days with a personal care and interest.

Congress held its first session in the Capitol in 1800. The city grew until 1814, when, after a weak resistance by American troops at Bladensburg, it was captured by the British, who set fire to the public buildings and some private residences, with the expectation of destroying the entire city. A storm put out the conflagration, and the next day the British, in a panic of unnecessary fear, retreated, leaving Washington to be immediately rebuilt. At the breaking out of the Civil War it contained about 61,000 inhabitants. The land through the northwestern part of the city fell into the hands of speculators of acute intelligence, and from time to time Congress was compelled to spend large sums of money in opening streets and beautifying that section of the city. In 1902 new improvements were begun according to a plan designed by Daniel H. Burnham, Charles F. McKim, Frederick Law Olmsted and Augustus Saint Gaudens. Prohibition went into effect in 1917.

Related Articles. Consult the following titles for additional information:
Corcoran Art Gallery
District of Columbia
Library of Congress
Washington Monument
Mount Vernon
National Museum
Potomac
Smithsonian Institution
White House

WASHINGTON, BOOKER TALIAFERRO (about 1858–1915), an American negro educator. Freed from slavery by the Civil War, he began work in a salt furnace in West Virginia, attended a night school and obtained the rudiments of an education. He then went to Hampton Normal and Agricultural Institute, where he remained three years. After this he took a complete course at Wayland Seminary in Washington, D. C., and then became an instructor at Hampton, in charge of the work of the Indian pupils and of the night school.

His success was phenomenal, and in 1881 he was selected by General Armstrong, principal of the institute, to start a normal school at Tuskegee, Ala. He began his work in an old building, with thirty pupils, but in the course of the year purchased the plantation where the Tuskegee Normal and Industrial Institute is now located. Under his management this school developed into the largest and most influential industrial school for colored people in the world (see TUSKEGEE NORMAL AND INDUSTRIAL INSTITUTE).



GEORGE WASHINGTON—*Stuart*
The unfinished portrait in the Athenaeum, Boston

He wrote *The Future of the American Negro, Up from Slavery* (his autobiography), *Character Building, The Story of My Life* and *Working with the Hands.*

WASHINGTON, GEORGE (1732–1799), an American soldier and statesman, the hero of American independence, and the first President of the nation which he helped to establish. There are two Americans of the generations now past who have won the undying love and reverence of their countrymen—Washington and Lincoln. Though they are equally honored, the one as founder and the other as preserver of the American nation, they are thought of as totally different types. Lincoln, so much nearer our own time, is by far the more human figure. His humanity, his rugged appearance, his humor and his kindliness are remembered as the characteristics of a very real man. Washington is more or less of a mythical personage. The idealized portrait painted by Charles Stuart, reproduced herewith in full page is in a way symbolic of the impression that Americans cherish of the "Father of His Country." He seems to them a lofty figure somewhat detached from everyday life; a great man, but one aloof from his fellowmen; a strong man, but without fire and vigor. The complete record of his life refutes these ideas. There is every reason to believe that if he were alive to-day he would be a virile and influential figure in American political affairs, a personality as vivid as in his own time.

Ancestry and Youth. The family of the first President came of a line of well-born Englishmen. They were the Washingtons of Sulgrave Manor, in Northamptonshire, who traced their ancestry to a Norman knight of the twelfth century. About the year 1657 John and Lawrence Washington, brothers, emigrated to America, and shortly afterwards purchased estates in Westmoreland County, Virginia. The eldest son of John was Lawrence Washington, the grandfather of the future President. His second son, Augustine, married Mary Ball as his second wife, and the first child of this marriage, George, was born on February 22, 1732, on the family estate at Bridges Creek, in Westmoreland County. When George was three years old his parents removed to an estate on the Rappahannock River, in Stafford County, and there the boy's first school days were spent. He went to his classes in an old-fashioned school house where the sexton of the parish acted as teacher.

At the age of eleven George lost his father, and his widowed mother sent him to the old homestead at Bridges Creek to live with his half brother, Augustine. There he attended school until he was nearly sixteen, geometry and surveying being included in his studies. While he was not an apt classical student, he made excellent progress in surveying, and throughout this school period he cultivated robust health by outdoor exercise, such as horseback riding and athletic games. It was when he was thirteen that he wrote the rules of good behavior now so well known.

Soon after he left school George went to live with his eldest half brother, Lawrence, who was occupying that portion of the estate known as Mount Vernon. Lawrence Washington had married the daughter of William Fairfax, who was the manager of the great estate of his cousin, Lord Fairfax, the head of the family. Lord Fairfax conceived a great liking for young Washington, and presently entrusted to him the task of marking out the boundaries of the Fairfax estate. George began his duties in 1748, when he was but a few days past sixteen, and for many months he endured the hardships of a surveyor in the wilderness. His work was so well done that he was subsequently appointed public surveyor of Culpeper County, and his surveys were considered admirable examples of thoroughness and accuracy.

In 1751 George accompanied his brother Lawrence on a trip to the West Indies. The journey was undertaken in the hope of restoring the elder brother's health, undermined by service in the British navy. In 1752, a few months after the brothers returned to Virginia, Lawrence died, and George found himself the guardian of his niece and one of the executors of the estate. The death of this niece a few years later made him master of the mansion and the beautiful grounds about it—the Mount Vernon that is to-day a sacred place to all loyal Americans.

Early Military Career. Not long before he died Lawrence Washington had used his influence to have his brother appointed an

adjutant-general over one of the several military districts into which Virginia colony was divided. This division was rendered necessary by the threatened encroachments of the Indians and of the French, who were establishing posts along the Ohio. Washington's eager pursuit of the study of military tactics was interrupted by the trip to the West Indies, but he resumed his duties as adjutant-general after his return, and late in 1753 was requested by Governor Dinwiddie to carry a message of warning to the French forces in the Ohio Valley. It was a hazardous mission for a young man of twenty-one, and the selection reflects favorably upon Washington's reputation for reliability and good judgment. In November, accompanied by an experienced frontiersman, he started on his 600-mile journey. After many narrow escapes from the Indians and the perils of the wilderness, he completed his mission and reported to Governor Dinwiddie on January 16, 1754, at Williamsburg, the capital of Virginia. Shortly afterwards he was appointed lieutenant-colonel of the Virginia regiment.

A skirmish with the French in the summer of 1754, which was not decisive, was followed by a reorganization of the Virginia troops and Washington's temporary retirement from things military. Early in 1755, however, General Braddock arrived from England with two regiments of British regulars, and offered the young colonial a place on his staff, with the rank of colonel. Promptly accepting, Washington entered eagerly into the preparation of the campaign, and on July 9 took part in the disastrous fight at Fort Duquesne. How the English regulars were mowed down by bullets fired from behind trees, and how the Virginians under Washington saved the little army from annihilation by fighting under cover, as did the French and Indians, is known to every American school boy. The troops succeeded in withdrawing from the field, but Braddock was fatally wounded, and died four days later. Washington later reorganized the colonial troops and was their chief commander until 1758, when he retired to Mount Vernon to rest. It was with great satisfaction, however, that, in November, 1758, he accompanied the British forces to the smoking ruins of Fort Duquesne, which was renamed Fort Pitt in honor of England's great Prime Minister.

At Mount Vernon. The period between the close of the French and Indian War and the outbreak of the Revolution brought to Washington some of the happiest years of his life. In January, 1759, he married Mrs. Martha Custis, an attractive and wealthy young widow with two children, John and Martha Parke Custis. The management of his own and his wife's property provided an outlet for his business instincts, and he entered whole-heartedly into the public affairs of Virginia colony as a delegate to the House of Burgesses, to which he had been elected before his marriage. These duties, with those of a good churchman and a hospitable colonial gentleman, rounded out a life completely wholesome and happy. The Mount Vernon mansion was always filled to overflowing during the hunting season, but none of its inmates enjoyed the pleasures of the chase more than the master himself.

As relations grew strained between the colonies and the mother country, Washington for a long time hoped that an agreement might be reached without resort to war, and he was very guarded in his utterances. In 1769, however, he drew up a nonimportation agreement which was adopted by the House of Burgesses, and from that time on he refused to permit any of the banned articles to be brought into his house.

As a member of the provincial convention, held in August, 1774, at Williamsburg, he vigorously upheld the right of the colonies to govern themselves, and, moved by reports about the effects of the Boston Port Bill, exclaimed in an impassioned speech, "I will raise a thousand men and march with them, at their head, for the relief of Boston." Virginia sent him as one of its six delegates to the First Continental Congress, and in this and the succeeding Congress, held in 1775, he was clearly one of the commanding figures, though he let others make the speeches.

The Revolutionary War. On June 15, 1775, two months after the Battle of Lexington, Washington was unanimously chosen by Congress to be commander in chief of the Continental forces. Addressing the assembly the following day, he modestly accepted the honor, and assured the delegates that he would expect no remuneration except for his own expenses. He then departed on horseback for Boston, and on July 3, 1775, took command of the Continental army, in Cambridge. The old elm under which this cere-

WASHINGTON'S HOME AND HIS TOMB AT MOUNT VERNON

mony took place is still preserved as a cherished relic.

The military events of the long struggle which the colonies waged for independence are told in these volumes in the article on the Revolutionary War. The personal share of Washington in the hard-won victory cannot be overestimated; from the perspective of a century and a half it seems almost incredible that he did succeed. Difficulties beset him that would have broken the courage of a weaker man. His little army of barely 14,000 was lacking in arms, supplies, discipline and organization. There was no uniform policy among the colonies on any matters essential to the prosecution of the war, and authority was vested in too many officials and organizations to bring about any semblance of unity. There were bickerings, quarrels and plots. Yet, somehow, Washington overrode all obstacles. For one thing, he was loved and trusted by his men, and because of that trust they endured terrible hardships to uphold him.

When the army went into winter quarters at Valley Forge, in December, 1777, Washington informed Congress that he had 2,898 men unfit for duty because they were "barefooted and otherwise naked." It is a matter of record that blood in the snow marked the path of those unshod troops as they marched into camp.

As a military leader Washington was superior to any of the field commanders sent over by England. In fact, his tactics in the movements on the Delaware River were characterized by Frederick the Great as the "most brilliant achievements recorded in military annals." Years later the old Prussian soldier sent his portrait to Washington, with this message: "From the oldest general in Europe to the greatest general in the world."

Coupled with his genius as a soldier was an abiding faith in the justice and ultimate triumph of the American cause. Toward the close of the struggle a movement was started to have Washington assume the title of king, but his repudiation of such a course was voiced in language as vigorous as he could make it. His great popularity never undermined his modest sense of his own worth or his deep-rooted conviction that the American nation was destined to be a democracy in which kings could have no part.

On November 2, 1783, he took final leave of his faithful army, and the following December appeared before Congress to resign the commission tendered him over seven years before. He said:

> Having now finished the work assigned me, I retire from the great theatre of action, and, bidding an affectionate farewell to this august body, under whose orders I have long acted, I here offer my commission, and take my leave of all employments of public life." "You retire," replied the president of Congress, "from the theatre of action with the blessings of your fellow-citizens; but the glory of your virtues will not terminate with your military command: it will continue to animate remotest ages."

On Christmas Eve Washington arrived at Mount Vernon, where, during the interval before the organization of the government under the Constitution, he enjoyed once more the life of plantation owner and private citizen.

The Constitution and the First Administration. Five years after the signing of the peace treaty a new crisis called Washington again into public life. Under the Articles of Confederation affairs were steadily growing more chaotic, and in May, 1787, a convention was called to meet in Philadelphia to prepare a new form of union. To this body Washington was sent as head of the Virginia delegation; on its organization he was unanimously elected its president. In September the convention completed a new Constitution and gave it to the states for ratification. The influence that Washington exercised in the consummation of this great achievement is ably summarized in Woodrow Wilson's *History of the American People*:

> "It gave the convention great dignity that Washington had presided over its counsels and was heart and soul for the adoption of the measures it proposed. His name and quiet force had steadied the convention on many an anxious day when disagreement threatened hopeless breach. His fame and influence infinitely strengthened also the measures proposed, now that they were completed. He supported them because they were thoroughgoing and courageous and cut to the root of the difficulties under which the country was laboring. Issue had been joined now, as he had wished to see it joined, between government or no government, and the country was to know at last where it stood in the most essential matters of its life."

It is not surprising that when the votes of the first Electoral College were counted it was found that Washington was the unanimous choice for President of the United States. John Adams was honored with the Vice-Presidency.

Washington was inaugurated in New York, which was then the national seat of government. Standing on the balcony in front of the old Federal Hall, whose site is now occupied by the imposing Subtreasury, he took the oath of office on April 30, 1789, though the legal day for the ceremony was March 4. Difficulties in setting the new machinery in motion were responsible for the delay.

From the first he displayed in civil affairs the same qualities of leadership and invariable good judgment which he had shown during his military career. He set about informing himself concerning all that had happened during the period of the Confederation—the relations of the new government to foreign nations, and the questions of internal administration and finance, which were soon to become pressing issues. He also chose a remarkably strong Cabinet, including Thomas Jefferson and Alexander Hamilton, who, though directly opposite in their political opinions, were acknowledged leaders in the political life of the country.

The selection of Alexander Hamilton as head of the Treasury Department was momentous in its results, for through his far-seeing statesmanship the country was put on a sound financial basis. In accordance with Hamilton's program the national government assumed the debts of the states incurred during the war; a national bank and a mint were established; and a national income was provided for by duties on imports and a system of internal revenue.

Other important events of the first four years under the Federal Constitution were the organization of the United States Supreme Court, the admission of Vermont (1791) and Kentucky (1792) as states, the adoption of a decimal system of coinage, and the incorporation into the Constitution of the first ten amendments. So profoundly impressed were the people with the results of Washington's first term that there was a spontaneous demand that he serve again. Against his personal wishes he consented, and was unanimously reëlected, being inaugurated in Philadelphia on March 4, 1793. The city of Washington did not become the national capital until 1800.

The Second Term. During this term international affairs for a time overshadowed domestic issues. A war between France and England vastly aroused the sympathies of a group friendly to France, and there were some extremists who demanded that the nation go to its assistance. Another faction as vehemently urged neutrality or support for England. Washington, who saw clearly that the United States was too weak and insecure to be implicated in European quarrels, issued a proclamation of neutrality and refused to take sides. An unfortunate incident of this affair was the activity of Edmon, or "Citizen," Genet, a Frenchman whose defiance of the proclamation caused the government considerable anxiety. The French sympathizers were also greatly exercised over the acceptance of the Jay Treaty (1794) with England. This treaty was not so favorable to America as its sponsors wished, but it was the best that could be obtained, and it served the purpose of averting war with England, which Washington felt would be a national calamity.

The power of the Federal government was vigorously exercised in this administration. In Pennsylvania in 1794 there occurred an insurrection in protest against the excise tax, to quell which Washington ordered out 15,000 militia. Trouble with the Indians was settled by Anthony Wayne's victory over them at Fallen Timbers in 1794, and by the negotiation of treaties. Other events include the invention of the cotton gin by Eli Whitney; the erection of the first woolen mill in Massachusetts; the admission of Tennessee into the Union, and the development of two great political parties, by followers of Hamilton and Jefferson, respectively.

The End of the Story. Washington declined a third election, delivered his famous farewell address and retired to Mount Vernon in 1797. Thereafter he devoted himself to agriculture, though in 1798, at the prospect of the war with France, he was chosen commander in chief of the United States army and accepted, though he was not called into the field. He died in December, 1799, from illness brought on by long exposure in the saddle. The news caused almost as widespread mourning in Europe as in America. The greatest statesmen and soldiers of every nation united in paying him tribute as a man, general, statesman and friend of humanity. The words of his old friend and companion, "Lighthorse Harry" Lee, "First in war, first in peace and first in the hearts of his countrymen," were without question literally true. He had avoided the snares of factional and partisan politics, had generously overlooked

OUR FIRST PRESIDENT

1789-1797

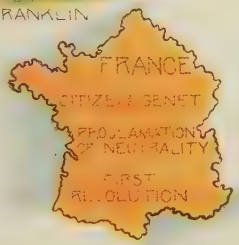
PRESIDENT WASHINGTON

BIOGRAPHICAL SKETCHES:
BIRTH; PARENTAGE; EDUCATION;
MARRIAGE; CHARACTER; PUBLIC
SERVICES; DEATH.

VICE-PRESIDENT ADAMS

BENJAMIN FRANKLIN
1706
1790

NATIONAL CAPITAL LOCATED



PRESIDENTIAL MANSION, NEW YORK, 1789
A PIER OF THE BROOKLYN BRIDGE
NOW OCCUPIES THE SPOT

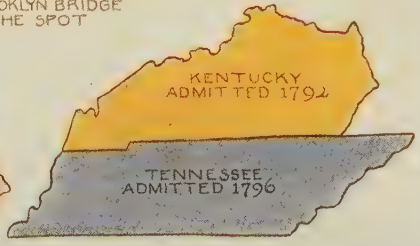
ADMITTED 1791

THE FIRST COTTON GIN

FOREIGN AFFAIRS

- FRENCH TROUBLES
- CITIZEN GENET
- JAY'S TREATY
- MISSISSIPPI TREATY
- TREATY WITH ALGERIA
- GREENVILLE TREATY
- ENGLISH ORDER IN COUNCIL

PENNSYLVANIA
The Capital State for Ten Years
Events
Indian War
Whisky Rebellion
Discovery of Anthracite Coal
Bank of the United States
Mint Established



DOMESTIC AFFAIRS

- AMENDMENTS
- INVENTIONS
- NATURALIZATION
- CENSUS
- TARIFF
- SLAVERY
- FINANCES
- REBELLIONS

"OF WASHINGTON IT WAS SAID: "PROVIDENCE LEFT HIM CHILDLESS, THAT HIS COUNTRY MIGHT CALL HIM FATHER."

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WHEN THE NATION WAS YOUNG

Administration of George Washington, 1789-1797

I. Election and Inauguration
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Questions on Washington

Where was Washington at the time of his election to the Presidency?

Where was he inaugurated?

What city was the capital during most of his administration?

How does he rank as a soldier and statesman?

In what way did Hamilton's ideas influence the organization of the government?

What were the original executive departments?

Was the Attorney-General the head of a department?

Who were the members of the first Cabinet?

When were the Federal courts established?

What compromise was necessary before Hamilton could secure the assumption of the state debts?

When was the Bank of the United States organized?

What were some of its powers?

When was the first tariff law passed?

What was its primary object?

When was the first census taken?

What states were admitted during Washington's term of office?

What caused the trouble with the Indians in the Northwest?

What battles were fought and with what result?

What party was friendly to France? Why?

Give an account of Genet's visit to the United States.

What was the Jay Treaty? What did it accomplish?

the harshest criticisms and had respected and used the abilities of his severest critics and opponents. Though a slave-holder at his death, he was in favor of the gradual abolition of slavery by legislation, and by his will he arranged that his one hundred twenty-five slaves should be emancipated at the death of his wife, so that the negroes of the two estates who had intermarried might not be separated. Washington's body and that of his wife, who survived him nearly three years, rest in the family vault at Mount Vernon.

Consult Lodge's George Washington, in the American Statesmen Series, and Fiske's Washington and His Country, a condensed and simplified edition of Washington Irving's Life of Washington.

Related Articles. Consult the following titles for additional information:

Braddock, Edward	Political Parties in the United States
Constitution	Tariff
French and Indian Wars	Revolutionary War
Genet, Edmon C.	United States
Jay Treaty	Whisky Insurrection
Mount Vernon	

WASHINGTON, Martha (1732–1802), the wife of George Washington, born in New Kent County, Va., the daughter of John Dandridge, a wealthy planter. Her first husband, to whom she was married in 1749, was Daniel Parke Custis. She was married to George Washington in 1759. As mistress of the White House she won a firm place in the hearts of the people. She died at Mount Vernon two years and a half after the death of President Washington.

WASHINGTON, Pa., the county seat of Washington County, situated thirty-two miles southwest of Pittsburgh, on the Pennsylvania and the Baltimore & Ohio railroads. It is the seat of the Washington and Jefferson College, the oldest college west of the Alleghenies, and also of the Washington Seminary. Notable structures are the Federal building, courthouse, library, sanitarium and hospital buildings. Washington is said to have erected the first community building in the United States. Glass, tubes, tin plate, pottery and baby carriages are the leading manufactures. The place was settled in 1768 and was originally called Bassettown. It received its present name in 1784 and was chartered as a borough in 1852. Population, 1910, 18,778; in 1917, 22,076 (Federal estimate).

WASHINGTON, Treaty of, the treaty between the United States and Great Britain, signed in 1871, providing for the settlement of several difficulties between the two countries, chief of which were the Alabama claims. A commission, which consisted of five representatives of Great Britain, headed by Earl de Grey and Sir John MacDonald, and five representatives of the United States, headed by Hamilton Fish and E. R. Hoar, began its meetings May 8 at Washington. It referred the Alabama Claims to a special court, which was to meet at Geneva (see Alabama, The Geneva Arbitration). It provided for the establishment of a mixed commission, to discuss and decide upon the northwestern fisheries question, and it submitted the northwest boundary dispute to the arbitration of the emperor of Germany. It also laid down certain rules regarding neutrality in war, which were to govern the Geneva Tribunal in deciding the Alabama question and which have since been considered the true principles of international law upon the subject.

WASHINGTON, University of, a coeducational state institution founded at Seattle. It was organized in 1861, but the regular four years' courses were not established until 1877. In 1889 it became the state university, as Washington entered the Union that year. It maintains a college of liberal arts, a college of engineering, a school of forestry, a school of mines, a school of business administration, a library school, colleges of pharmacy and law and a graduate department. The university has a faculty of nearly 200, and a student body of about 4,000. The library contains over 83,800 volumes.

WASHINGTON AND LEE UNIVERSITY, a coeducational institution located at Lexington, Va. It was established as the Augusta Academy in 1749 and afterwards renamed Washington Academy in recognition of a gift of money made to the institution by the "Father of his Country." This gift still yields an annual income of $3,000. In 1865 General Robert E. Lee was made president of the institution, a position which he held with great influence upon the students for five years. In 1871 the present name of the institution was adopted. The university is divided into schools of commerce, applied science, law and courses leading to the degrees of B.A., B.S., and LL.B. It has a faculty of thirty-five members, about 500 students and property and endowment aggregating $1,700,000.

WASHINGTON ARCH, a beautiful memorial structure, erected to commemorate the

first inauguration of George Washington as President of the United States. It stands at the foot of Fifth Avenue, New York, and was designed by Stanford White. It is of marble, seventy-seven feet high and sixty-two feet broad, with a single archway forty-seven feet high and thirty feet broad. Its cost of $128,000 was met by popular subscription.

WASHINGTON ELM, a famous elm, standing near the northwest corner of the Common, in Cambridge, Mass. Near the base is a stone seat with the inscription: "Under this tree Washington took the command of the American Army July 3, 1775." The tree is carefully protected, but is decaying with age.

WASHINGTON MONUMENT, an imposing marble obelisk in Washington, D. C., measuring 550 feet in height. It is the tallest structure in the world, excepting the Eiffel Tower in Paris. It was begun in 1848, but was not dedicated until 1885, on Washington's birthday. The top, from which a magnificent view of the surrounding country is obtained, is reached by an elevator and also by an interior iron stairway. The monument covers an area of 16,000 square feet and cost $1,187,710.

WASHINGTON UNIVERSITY, a coeducational school at Saint Louis, Mo., founded in 1853 by Dr. William Greenleaf Eliot, on condition that it be kept nonsectarian and nonpartisan. Its activities were carried on in different parts of the city till 1905, when all were removed to the present fine location outside the city limits. Ten new granite buildings on this site were occupied by exhibits and executive offices of the Louisiana Purchase Exposition in 1904. The departments of the university are those of engineering, architecture, law, medicine, dentistry, fine arts and social economy. The faculty numbers 230, and the student registration is about 2,000. The library contains 165,000 volumes.

WASHITA, *wosh'e tah*, RIVER, or OUACHITA RIVER, a river that rises in the western part of Arkansas, flows southeast and then south into Louisiana and discharges into the Red River, about fifteen miles above the confluence of that stream with the Mississippi. The Washita is connected with the Mississippi by a series of bayous. Its length is 550 miles, and it is navigable for steamboats for about 350 miles.

WASP, *wahsp*, a winged insect resembling the bee in many respects. The body is bluish in color, with yellow markings, or black, marked with white or yellow. Common wasps live in societies, or colonies, composed of males, females and workers, or neuters (see BEE). The females are armed with an extremely powerful and venomous sting; the males do not sting.

The nest of the wasp is ingenious, both in material and construction. It is built in the ground or attached to a wall or tree, and is composed of a kind of chewed wood pulp or paper manufactured by the females. Within these nests the combs are enclosed completely, except for the small opening where the wasps enter. The cells of the comb, in which the larvae and pupae are reared, are six-sided and arranged in tiers, with the mouth downward or sidewise.

Wasp colonies multiply rapidly, and have been known to attain to 30,000 members in a favorable summer season. But in the fall all the members perish except a few females, which pass the winter under stones or in hollow trees. Wasps are voracious insects, living upon sugar, meat, fruit, honey or the juices of other insects. Certain species live solitary lives, each mother making its own nest and caring for its own eggs and larvae.

WATAU'GA ASSOCIATION, in American history a name given to an association of settlers, formed in 1772, in the eastern part of what is now Tennessee, just west of the Alleghany Mountains. Articles were drawn up for the purpose of creating a government for the district, and provision was made for five executive councilors, thirteen legislators, a sheriff and an attorney. The government had no jurisdiction over any but the signers of the compact, and the territory soon swarmed with outlaws and adventurers. In order to secure protection, the community, under the name of Washington District, asked for and secured representation in the North Carolina Assembly.

WATCH, a small, portable mechanism for measuring time, having about the same number of wheels as a clock, geared in the same manner, but differing from a clock in having a hairspring and a balance wheel, instead of a pendulum, and in having its parts much smaller and more delicately adjusted. It is attached to a chain and carried in the pocket, or to a bracelet and worn on the wrist.

Mechanism. A watch consists of two parts, the case and the works. The case is of metal, usually gold or silver, and it is made with one or two covers. The works consist of two plates, perforated for the purpose of holding the wheels in position, and so arranged that they contain, between them, all of the wheels except the balance wheel. The lower plate, known as the pillar plate, rests next to the dial. The upper plate may be in one or in several pieces, but in the best-made watches it is usually in one piece. These plates are bored and chiseled so that each wheel fits perfectly into its place. The perforations, in which the minute axles of the wheels rest, are usually set in jewels, which prevent wear. There are four wheels in the watch; these are (1) the barrel wheel, within which the mainspring is attached, (2) the first wheel, (3) the second wheel and (4) the third wheel, which is attached to the pinion of the escapement wheel. The motion is imparted by the uncoiling of the spring and is regulated by the escapement, which is kept in operation by the action of the mainspring and the hairspring combined, the two giving it an oscillating movement. The wheel which meshes into the pinion of the escapement wheel revolves once a minute and has sixty teeth upon its circumference. The pinion of this wheel meshes into the circumference of the wheel which gives the motion to the minute hand, and this meshes into the pinion of the center wheel, which gives the motion to the hour hand. The watch is regulated by a lever device, connected with the hairspring. By moving this to the right, or left, the tension is lessened or strengthened.

Watch Making. The works of a watch have for their foundation two plates of an alloy of brass and nickel. These plates are cut at the foundry, where the metal is cast, from dies furnished by the watch factory.

The rough plates are passed under trimming, or stripping, punches, which smooth off the roughness. Indentations absolutely exact are then made in the foundation plate, to allow room for the wheels. The plate is placed under the lathe portion of a machine, and a steel copy of what it is to be is fastened to another part. The machine follows the outline of the steel model, gradually cutting out the foundation plate, so that the various parts of the mechanism of the watch will be thrown into proper position. The thickness of the plate and the depth of the indentations are measured so as to be perfect, according to a gauge, two degrees of which equal the thousandth part of an inch. The necessary screw holes and apertures for the settings are then drilled into the plate. The work on the upper plate is done in the same manner. The plates are then polished and smoothed down, on an Ayr stone, a stone harder than a soapstone and softer than emery, capable of polishing without scratching.

The jewels used in watch making are garnets, rubies, sapphires and diamonds. Garnets are most common and are cut with diamond points into minute disks and then smoothed and pierced. These disks are set in larger disks of gold. The foundation plates are given an ordinary heavy plating of gold, by the battery process, and the jewels with their settings are fitted and fastened into the plate by exceedingly small screws.

The wheels of a watch are stamped out of sheets of brass, with the exception of one or two pieces. The screws and springs are made from sheet steel, the screws being cold-drawn from wire. In tempering some of the screws, the workman uses a thermometer of a peculiar sort, in order to regulate accurately the temperature to which they are to be heated and cooled. Others are regulated by a careful observation of their color. The figures are printed on the dial by a process resembling lithography (see LITHOGRAPHY). The base of the dial is of copper and is stamped out of a thin sheet of the metal, in such a manner that a rim is left turned up for a short distance all around. Powdered enamel is spread on the disk, and it is then fired, like pottery or china. Steel plates are engraved with the design to be executed, and the lines are filled with a mineral paint of the desired color. The plate is then passed under a roller, covered with sheet rubber, and the dial receives the impression from the rubber on the roller. It is again fired, and when fancy colors are employed, each color requires a separate impression and firing. The balance wheel requires forty different steps in its manufacture.

When all the parts are assembled, the watch is taken to a refrigerator and subjected to cold. This is followed by a period in a hot air compartment, the two tests ranging from 40° to 103° F. The making of

watches by hand is thought to have originated in Germany about 1500. Since the advent of the machine-made watch, the United States has reached the foremost position as a watch-manufacturing country. The largest watch factory in the world is at Waltham, Mass., and another, nearly as large, is located at Elgin, Ill. See CLOCK.

WATER, the liquid that covers five-sevenths of the earth and is essential to all animal and vegetable life, is a chemical compound of hydrogen and oxygen in proportion of two atoms of the former to one of the latter. Its chemical symbol, therefore, is H_2O. Pure water is a colorless, tasteless, odorless liquid. It appears blue, like the atmosphere, when seen in mass.

Three Forms of Water. Water takes three forms, each depending upon temperature. It takes a solid form, that of ice or snow, at 32° Fahrenheit (0° Centigrade) and all lower temperatures; and it takes the form of vapor or steam at 212° F. (100° C.) under a pressure of 29.9 inches of mercury, and it retains that form at all higher temperatures. Under ordinary conditions, water possesses the liquid form only at temperatures lying between 32° and 212°. It is, however, possible to cool water very considerably below 32° F. and yet maintain it in the liquid form. Water may also be heated, under pressure in the laboratory, many degrees above 212° F., without passing into the state of steam.

The specific gravity of water is 1 at 39.2° F., (that is, one cubic centimeter of water weighs one gram), and it is the unit to which the specific gravities of all solids and liquids are referred, as a convenient standard; one cubic inch of water, at 62° F. and 29.9 inches barometrical pressure, weighs 252.458 grains. Distilled water is 815 times heavier than atmospheric air. Water is at its greatest density at 39.2° F. (4° C.), and in this respect it presents a singular exception to the general law of expansion by heat. If water at 39.2° F. be cooled, it expands as it cools, till reduced to 32°, when it solidifies; and if water at 39.2° F. be heated, it expands as the temperature increases, in accordance with the general law. Were it not for this peculiar property of water, ice would settle to the bottom of lakes and streams and they would become masses of solid ice, a condition which would soon destroy all life upon the earth.

Water as a Solvent. From a chemical point of view, water is a neutral fluid and shows in itself neither acid nor basic properties; but it combines with both acids and bases, forming *hydrates,* and with neutral salts. Water also enters, as a liquid, into physical combination with the greater number of all known substances. Of all liquids, water is the most powerful and general solvent, and on this important property its use depends. In consequence of the great solvent power of water, it is never found pure in nature. Even in rain water, which is the purest, there are always traces of carbonic acid, ammonia and sea salt. Where the rain water has filtered through rocks and soils and reappears as spring or river water, it is always more or less charged with salts derived from the earth, such as sea salts, gypsum and chalk. When the proportion of these is small, the water is called *soft;* when larger, it is called *hard water.* The former dissolves soap better and is therefore preferred for washing; the latter is often pleasanter to drink. Some springs contain a considerable quantity of foreign ingredients, which impart to the water particular properties. The only way to obtain perfectly pure water is to distill it, but matter simply held in suspension may be taken out by suitable filtration.

Sources of Water. The great reservoirs of water on the globe are the seas and lakes, which cover more than three-fifths of its surface, and from which water is raised by evaporation. Uniting with the air in the state of vapor, it is wafted over the earth, ready to be precipitated in the form of rain, snow or hail. Water, like air, is absolutely necessary to life, and healthy human life requires that it should be free from contamination; hence, an ample and pure water supply is considered as one of the first laws of sanitation.

Related Articles. Consult the following titles for additional information:

Boiling Point	Frost	River
Chemistry	Hail	Snow
Cloud	Humidity	Spring
Dew	Hydrogen	Steam
Distillation	Ice	Vapor
Erosion	Mineral Waters	Water Power
Evaporation	Ocean	Water Purification
Freezing	Rain	

WATER, ORDEAL BY. See ORDEAL.

WATER BEETLE, any representative of several families of beetles which live in or upon the water. Three of the families include

beetles which live permanently in water; the rest include those species which live in the water only in the larvae (young) stage.

The *diving beetle* has a flat, oval body, over which the wings fit tight. The hind legs, which have a fringe of hairs, are flattened and adapted to swimming; the front legs are short. The common *water beetle* seen in summer darting over the surface of ponds has a water-tight compartment beneath the close-fitting wings for the storage of breathing air. In the evening these beetles leave the water and fly about. The larvae, called *water tigers,* are exceedingly rapacious, seizing in their sickle-like jaws small fish, tadpoles and other larvae, from which they suck the juices. Breathing is effected through tubes terminating in the tail, which is raised above the surface of the water.

The *whirligig beetles,* so called from their habit of moving in circles on the water, have long, clawed front legs and shorter, paddle-shaped hind legs. The body has an oily surface unaffected by water, and the compound eyes are adapted for vision in water and in air. One of the largest of the water beetles is the glossy *black beetle,* often seen on the wing at night. These insects can be transferred to an indoor aquarium, and their whole interesting life history may be studied in the school room. See BEETLE.

WATER BUG, a name applied to any insect belonging to one of six large families, including *water striders, water boatmen, water scorpions, toad bugs* and *fishkillers.* All have flat bodies, and are equipped with oar-shaped legs for swimming. They may be seen on summer days darting over the surface of ponds and lagoons or resting quietly on the surface, their bodies being buoyed up by the air stored in various parts of the insects. If alarmed, they may dive to the bottom and cling to plants or stones. About a dozen species are found in America. Some of them leave the water and fly around lights at night; the electric light bug is one of these. Some of the adults lie dormant in the mud of water bottoms in winter; others hibernate in rubbish on the banks, and here the eggs are deposited. When the young hatch they tumble into the water and feed on insects and other small animal food. The females of some species bore holes in aquatic plants and deposit their eggs there. In the United States the *croton bug,* a house pest resembling the cockroach, is incorrectly called water bug, because it is usually seen on or near warm-water pipes.

WAT'ERBURY, CONN., one of the county seats of New Haven County, thirty miles southwest of Hartford, on the Naugatuck River and on the New York, New Haven & Hartford Railroad. It is an important manufacturing center, leading the United States in brass and copper goods and for this reason sometimes known as the "Brass City." The famous Waterbury watches have been manufactured here in immense numbers since 1879. There are also button factories, foundries, machine shops, knitting mills, clock factories, bottling works, publishing houses and engraving establishments.

Among the educational institutions are Saint Margaret's School for girls, Convent of Notre Dame, Gerard School, two business colleges and a public high school. Other important features are the Bronson Public Library, Waterbury Hospital, St. Mary's Hospital, Southmayd Home for old ladies, the city hall and the Masonic Temple. The place was settled in 1677 and was known by the Indian name of Mattatuck until its incorporation as a town, in 1686. It was chartered as a city in 1853. In 1691 it suffered from a flood; in 1712 an epidemic proved fatal to about one-tenth of the population, and in 1902 a large portion of the business section was destroyed by fire. The town and city of Waterbury were consolidated in 1900 and cover an area of twenty-eight square miles. Population, 1910, 73,-141; in 1917, 89,201 (Federal estimate).

WATER COLORS, pigments mixed and ground with gum size or some other adhesive substance, instead of oil. The water colors used in painting pictures are in the form of small, dry and hard cakes, while those used in coloring walls and the like are simply mixed up with glue or size. The quick drying of water colors is favorable to rapid execution, and a greater clearness and transparency is obtained than in an oil painting.

WATER DOG. See MUD PUPPY.

WATERFALL. See CATARACT.

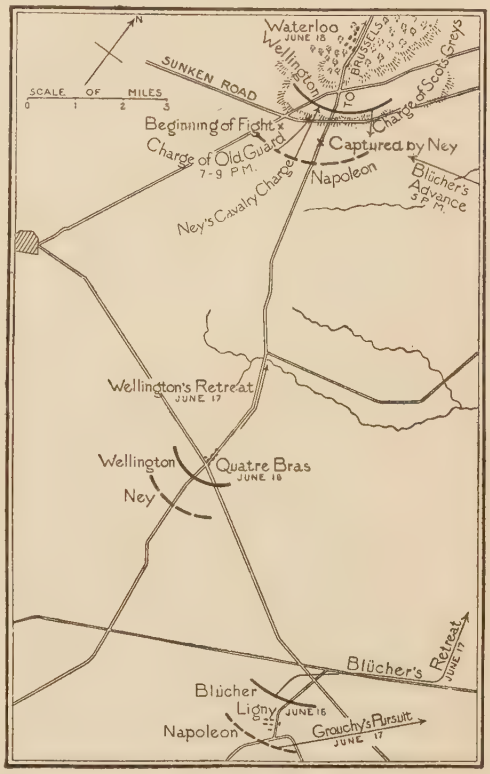
WATER LILY, a water plant with a gorgeous blossom, found in quiet waters of the temperate and torrid zones. From the oozy bottom the stems rise to the top of the water; there the leaves open out and lie flat upon the surface, and the buds unfold, disclosing numerous petals, stamens and carpels. The flowers may be pink, white or blue, and

sometimes they are very fragrant. The most famous of water lilies is the Queen Victoria, a native of South America. The leaves, six feet or more in diameter, are flat, with upturned rim, and are often strong enough to support a man's weight. The blossoms, a foot in diameter, open on two successive nights; the first night they are white and fragrant, the second, pink and malodorous.

The Australian water lily is often as large and is usually blue. The Egyptian lotus is also a blue lily, famous since remote antiquity. The American pond lily is a lovely, creamy-white flower, with petals radiating in circles and a cluster of golden stamens. It expands to the sunshine and closes at dusk. The golden lily of Florida is a handsome flower, and the common yellow water lily of higher latitudes is less showy, but blooms all summer. A rose-colored variety is also found in North America. The seeds of the pond lily lie sunk in pits in the flattened top of a hemispherical pod. Those of several species are edible, and are sometimes called *water chinquapin*. They were an important article of food among the Indians.

WATERLOO, Battle of, the famous battle, fought June 18, 1815, near Waterloo, a village in Belgium about eleven miles south of Brussels, between Napoleon and the allied forces under Blücher and Wellington. It was Napoleon's last battle, and it put an end to his power (see Hundred Days). There had been two preliminary battles on the 16th, one at Quatre-Bras, by which Ney, although forced to retire, prevented Wellington from joining his Prussian allies, and one at Ligny, in which the Prussians under Blücher were defeated by Napoleon. On the morning of the eighteenth the main French army was drawn up near Waterloo, opposite the allied British, Dutch and German forces, under Wellington. Blücher, with the Prussian army, was absent at the opening of the fight. The French army numbered about 72,000, the allied army about 67,000, of which number many were untrained troops.

Napoleon's plan was to defeat Wellington before Blücher could come up with his troops, but the ground was in such a condition from the rain that had fallen all night that he was obliged to delay opening battle until almost noon. Wellington, on the contrary, simply aimed to hold out until the Prussians arrived, when a combined attack might be made on the French. In accordance with these plans the struggle throughout the day consisted chiefly of charges, brilliant but unsuccessful, on the part of the French, and firm resistance on the part of the English. The French



BATTLE OF WATERLOO

cavalry, charging during the afternoon, plunged into an unseen sunken road, and unable to check their rush, they filled the great ditch with troopers, over whom the remainder rode on. These repeated charges, although stubbornly resisted, had their effect, and the outcome of the battle remained doubtful until late in the day, when the arrival of the Prussians, at a time when both armies were about exhausted completely turned the tide against the French. Napoleon's last effort was the charge of the Old Guard, the picked veterans from the Imperial Guard, late in the evening. Its rout was complete, and many of its squares, refusing to surrender or retreat, fell to the last man. Wellington now gave the order for a general advance, and the French, utterly overpowered, gave way at every point. The army broke up in confusion, and the dis-

astrous retreat, with the Prussians in pursuit, lasted through the night. Napoleon himself escaped by flight. The French lost in this battle probably thirty-one thousand in killed, wounded and missing, while the allies lost over twenty-two thousand.

The importance of the Battle of Waterloo as the means of finally crushing Napoleon has been somewhat exaggerated. Even had he been successful on that day, he could never have regained his old power. But the accomplishment of his overthrow that early in his campaign was fortunate for the allies and for the French, as it saved further bloodshed. See NAPOLEON I.

WATERLOO', IOWA, the county seat of Black Hawk County, on the Red Cedar River and on the Chicago, Rock Island & Pacific, the Illinois Central, the Chicago Great Western, and the Waterloo, Cedar Falls & Northern railroads. Since 1900, Waterloo has been one of the most rapidly growing cities in the state. It is known as the "Factory City;" it manufactures about twenty per cent of all the United States-made gasoline engines of the farm type. There are also foundries, malleable iron works, concrete works, machine shops, farm implement factories, packing houses, canneries and cream separator factories. The principal structures are a Federal building, a courthouse, municipal buildings, two Carnegie Libraries, Presbyterian and Serphic Heights hospitals, the Russell-Lamson Hotel, and several imposing bank buildings and business blocks. Our Lady of Victory Academy and two business colleges are located here. The city was settled about 1845, and was incorporated in 1868. Population, 1910, 26,693; in 1917, 36,987 (Federal estimate).

WATERLOO, ONT., on the Grand Trunk Railway, three miles northwest of Berlin. It is an important center for manufacturing, furniture, boots and shoes, threshing machines, buttons, mattresses, washing machines, trunks and bags, bricks and tiles being the most important products. Niagara electric power is furnished to the factories. There are good public and separate schools and six churches. Population, 1916, 5,090.

WATERMELON, a creeping variety of gourd. The rind of the fruit is smooth and dark green when ripe; the inside of the melon is a coarse red or yellowish pulp, ninety per cent of which is water. Its native home was Africa, but it has been widely cultivated from remote times. It is very popular in the United States, where it has become a most important crop for the fruit-growers of the South Atlantic and Gulf states, in which sections thousands of acres are devoted to raising melons for the northern market. Watermelons in smaller quantities are raised as far north as Southern Ontario. The ideal soil for melon culture is light, sandy loam, which is naturally dry or else thoroughly drained. Most melons weigh from twenty to fifty pounds.

WATER PLANTS. See AQUATIC PLANTS.

WATER POLO, a ball game similar to hockey, played by swimmers, with a ball filled with air, which floats. It is a good game for swimming tanks, and is then played generally throughout the winter season. The object of the game, of course, is for one side to carry, push or throw the ball to the opponent's goal line, at the end of the tank.

WATER POWER. By far the larger part of the machinery in the world is operated, directly or indirectly, by water power. Many of the great factories, mills and electric plants are located on or near rapid streams, because water power is much less expensive than steam power. The installment of a water-power plant usually requires the construction of a dam, a canal or flume to conduct the water to the wheel, and a power house. The original expense may be greater than that of a steam plant, but the extra expense is soon recovered by the saving in operating expenses, for when properly installed, the water-power plant will run for years with only slight repairs, and without fuel cost.

Classification. Water-power plants are divided into three classes—*low-head, medium-head,* and *high-head,* according to the height of the fall. Low-head plants have a fall not exceeding 100 feet; medium-head, not exceeding 350 feet, and the high-head class includes all plants having a fall of more than 350 feet. The fall of some plants in this class exceeds 5,000 feet. Most of the great plants are of low-head type, and they are located on the banks of large streams. They gain in volume what they lose in fall. The largest plant of this type in the world (1919) is at Keokuk, Iowa (see KEOKUK). The most noted plant of the medium-head type is at Niagara Falls, where over 300,000 horse power has been developed.

Plants of the high-head type are usually found on mountain streams having a rapid flow and small volume of water. A dam is constructed across a deep, narrow valley to impound the water, which is conducted to the power house through steel pipes. The power house may be two or three miles below the dam, so a high fall is secured. These plants are operated by a small volume of water under very high pressure and they require a special type of water wheel (see TURBINE WHEEL). Their principal use is in generating electric power, which is often carried long distances over wires. The power used in operating the street cars in San Francisco, for instance, is generated over 125 miles from the city.

Estimating Water Power. The power of water for operating machinery is derived from its weight or pressure. The pressure of a column of water of a given height is equal to the weight of the water. A cubic foot of water weighs 62.5 pounds; therefore a column of water one foot square and ten feet high weighs 625 pounds, and at its base exerts a pressure on a square foot equal to that weight. The rule for estimating the horse power of a water fall is as follows: Multiply the flow in cubic feet per second by the height of the fall and this product by .1134. A fall of 100 feet and 600 cubic feet flow will have a power equal to 100X600X .1134, or 6,804 horse power.

Government Ownership. In the United States all water power on government land is under control of the government, and since the beginning of the present century stringent laws for preventing great power sites from falling into the hands of monopolists have been passed. Unfortunately, however, before the conservation movement was started, many valuable sites had been appropriated by capitalists and a legal claim to them had been established. Since water, like air, is one of the great natural resources of a country, the theory of the most enlightened governments is that it belongs to all the people; therefore all water power should be under control of the government, and it should be leased, not sold. Canada is far ahead of the United States in this respect, for in Canada all water power is under government control. Power sites may be leased, but none can be purchased.

It is estimated that the total water power of the United States is 30,000,000 horse power, and that less than one-sixth of it has been developed. The water power of Canada is estimated at 18,000,000 horse power, only about eight per cent of which has been developed. Europe has 41,000,000 horse power, and utilizes only one-tenth of it. The water power of the other continents is not known.

WATERPROOFING, a process of rendering cloth and other articles proof against water. In the preparation of mackintoshes a solution of rubber is spread on the goods, and the cloth is doubled, pressed and finished with the waterproof layer in the middle. Such goods are impervious both to air and to water, but from a sanitary point of view they are not desirable for constant wear. A new process has been introduced, which renders the fabrics proof against water, but does not obstruct ventilation. The materials are saturated with soap and then dipped in an alum solution. Still another process, by which the same result is obtained, consists of treating the fibers of the cloth, instead of the manufactured, woven fabric, with the solution. Paraffin is often used as a substitute for rubber in waterproofing leather, wood and various other substances. Paper is made waterproof by immersing it in a solution of shellac in borax, a treatment which causes it to resemble parchment paper.

WATER PURIFICATION. Pure water is essential to health, and often one of the most perplexing problems connected with water supply is that of securing pure water. Because of its solvent power, all water obtained from natural sources contains more or less impurities, some of which may be highly injurious. Among the mineral impurities held in solution are usually found lime, iron, compounds of sulphur and sometimes compounds of lead. The impurities not held in solution are clay, particles of soil, animal and vegetable matter and bacteria.

Lime and sulphur are not injurious to health; neither is iron, unless it occurs in excess. The presence of clay, sand and organic matter makes the water turbid, and the organic matter renders the water dangerous to health. All these substances should be removed.

The processes employed for purifying water on a large scale include settling or sedimentation, filtering and chemical treatment. Settling is secured by allowing the water to remain quietly in large tanks, from

which it flows slowly from the top. Where the water contains a large quantity of solid matter two or three settling tanks may be necessary, but usually one is sufficient. The sand and gravel of the earth form a natural filter for spring water, and this sort of filter is used in water purification. The filters consist of large tanks with perforated bottoms, over which layers of gravel and sand are placed. As the water percolates through these layers the solid matter and most of the bacteria are removed. If the water contains a large proportion of lime, it may be treated with a solution of sulphate of alumina. The lime separates this compound into alumina and sulphuric acid. The acid unites with the lime or magnesia in the water and renders it harmless, and the alumina coagulates the organic matter and carries it to the bottom of the tank.

Home Tests. Epidemics of typhoid, diphtheria and other contagious diseases are often traced to impure water. Because water is clear, it does not follow that it is pure. A glass of the most sparkling water imaginable may contain millions of death-dealing germs, and every household should know of simple means of testing water whose purity is suspected. The following tests can be applied by any one at practically no expense:

(1) Into a vial containing about two ounces of water put a quantity of granulated sugar equal in volume to a pea or small bean. When the sugar is dissolved, cork the vial and set it in a warm place for forty-eight hours. If, when the cork is removed, the water emits a disagreeable odor, it is unsafe.

(2) Make a solution of permanganate of potash by dropping into an ounce of water a few crystals of this substance, which can be obtained at any drug store. Into a glass of the suspected water place a few drops of the solution. If the purple color disappears, the water is unsafe.

These tests are satisfactory within certain limits, but all water suspected of pollution should be tested by a chemist; any householder may have this done free of charge by sending a sample of the water to the State Department of Public Health or to the state university. Water for household purposes should not be run through lead pipes, for it may attack the lead and form compounds that are exceedingly poisonous. See LEAD POISONING.

WATERSHED, an elevation of land which separates the headwaters of natural drainage systems. Such a configuration of land is sometimes called a *divide*. A watershed separating great river systems may be only a slight rise of ground, such as the divide between the waters flowing into Hudson Bay on the north and the Gulf of Mexico or the Atlantic on the south and east. Again it may be a range of lofty mountains, such as the Rockies, which separate the headwaters of streams flowing respectively into the Mississippi and the Pacific.

WATERSPOUT, a whirling column of water, extending from a cloud to the surface of a body of water, like the ocean or a lake. The presence of this column is marked by the cloud of vapor which it contains. This cloud is formed by the rapid condensation of the moisture in the atmosphere, due to expansion and rapid cooling, caused by the low pressure in the area occupied by the column. If the conditions continue a sufficient length of time, rain is produced and sometimes falls in such quantities as to constitute a small deluge. In waterspouts over the ocean, the lower part of the column may contain vapor from salt water, but usually the vapor is that of fresh water. Waterspouts are caused in the same way as whirlwinds. See WHIRLWIND.

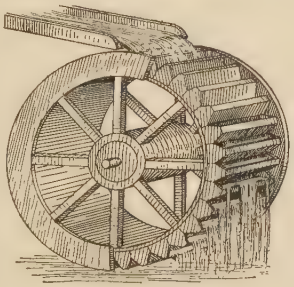
WATERTOWN, N. Y., the county seat of Jefferson County, seventy-three miles northeast of Syracuse, on the Black River and on the New York Central Railroad. The city is the center of one of the most productive dairying regions of the country, doing an annual business in cheese alone of $1,500,000. There are also extensive deposits of iron and limestone in the vicinity. The river furnishes extensive water power, and there are large paper and pulp mills, foundries, machine shops, silk mills and other establishments. The principal buildings include a Federal Building, a Masonic Temple, a Y. M. C. A., the Flower Memorial Library, a courthouse and an armory. The city has two hospitals, two orphanages and a home for the aged. Watertown was settled in 1800, was made the county seat in 1805, and was chartered as a city in 1869. It adopted the commission form of government in 1918. Population, 1910, 26,730; in 1917, 30,404 (Federal estimate).

WATERTOWN, S. D., the county seat of Coddington County, 214 miles west of Minneapolis, on the Big Sioux River and on the Chicago & North Western, the Chicago, Rock Island & Pacific, the Great Northern and

the Minneapolis & Saint Louis railroads. It is about three miles from Lake Kampeska, a resort for camping and fishing. Watertown is an important shipping point for grain and stock. There are large grain elevators, warehouses and flouring mills. Leather goods, agricultural implements, carriages and wagons, foundry and machine shop products are manufactured. The city has a Carnegie Library and two hospitals. It is under the commission form of government. Population, 1910, 8,829.

WATERVILLE, MAINE, a city in Kennebec County, seventeen miles northeast of Augusta, on the Kennebec River and on the Maine Central Railroad. Colby College, Coburn Classical Institute, the Urusline Academy and a Carnegie Library are notable institutions and buildings. The principal industrial establishments are run by water power from the river and include cotton mills, woolen mills, railroad shops and furniture and carriage factories. The first settlement was made here about 1760, but it remained a part of Winslow until 1802. The city was chartered in 1888. Population, 1910, 11,458; in 1917, 12,903 (Federal estimate).

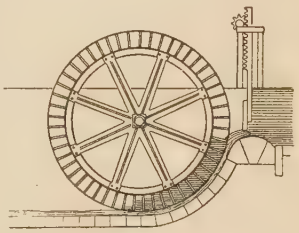
WATERVLIET, *waw tur vleet'*, N. Y., a city in Albany County, on the Hudson River, opposite Troy, near the terminals of the Erie and Champlain canals, and on the Delaware & Hudson railroad. A United States arsenal was established here in 1807 on a reservation of 109 acres, and has since been one of the largest permanent centers in the country for the manufacture of war materials. Other manufactures include woolen goods and iron and lumber products. The place was originally called West Troy. It was incorporated as a village in 1836 and as a city in 1897. Population, 1910, 15,074; in 1917, 15,622 (Federal estimate).



OVERSHOT WHEEL

WATER WHEEL, a wheel constructed and set up for operating machinery by water power. The old style water wheels were large wooden structures, rotating upon a horizontal axis. They were constructed of two frames, from four to six feet apart, joined at their circumferences, with buckets or floats attached, as occasion required. They were known as *overshot or undershot* wheels, according to the method of operating, the overshot wheel receiving water at the top, and the undershot at the bottom. Each of these is described under its respective title. The *breast* wheel has the water admitted to the floats at a point horizontally opposite the axle.

A recent modification of the undershot wheel consists of a small iron wheel, with cups or buckets upon its circumference the whole enclosed in an iron box. This is often known as the *impact wheel* or, *water motor*. The water issues from a small nozzle under very high pressure, and as it strikes the box it causes the wheel to revolve with great rapidity. These wheels are convenient, because of their small size and the ease with which they can be placed in almost any desired position, but they are of use only in cities where the waterworks enable a high pressure to be obtained. Another form of wheel in common use is the turbine. See TURBINE WHEEL.



BREAST WHEEL

WATERWORKS, the system of reservoirs, pumps and mains arranged for supplying a community with water for domestic use, manufacturing purposes, fire protection and street and lawn sprinkling. The water supply of large cities is usually conducted from near-by lakes or rivers; small towns obtain their supply from springs or wells. The selection of a source of supply must be made with great care, in order that it may be free from decaying animal and vegetable matter and other organic impurities. It must also be free from sewage contamination. Cool water is considered better than warm, because it is less hospitable to the propagation of life.

Where the source of supply is a long distance from the city, a reservoir is usually constructed, which is connected with the city by an aqueduct emptying into one or more smaller reservoirs, as in the New York City plant. From these reservoirs the water is distributed through mains to different

portions of the city, and from the mains to consumers. When situated near a suitable source of supply, the water is pumped directly through the mains, as is the case in Chicago, which secures its water from Lake Michigan. Small cities commonly use standpipes for reservoirs. These are constructed of iron or steel, and are mounted on foundations of masonry.

WATSON, *wat'son*, JOHN (1850–1907), well known under the pen name of Ian Maclaren, an English author and clergyman, born at Manningtree, in Essex, of Scotch parents. He graduated in 1870 at the University of Edinburgh, and studied theology at New College, Edinburgh, and at Tübingen. His first charge was at Logiealmond, in Perthshire. In 1877 he became associate pastor of Saint Matthew's Church, Glasgow, and he took charge of the Sefton Park Presbyterian Church, Liverpool, in 1880. A number of sketches of humble Scottish life, which were published in the *British Weekly*, were in 1894 collected into a little volume called *Beside the Bonnie Brier Bush*, and it is by this work that he is best known. Among his other writings are *The Days of Auld Lang Syne*, *Kate Carnegie*, *The Mind of the Master* and *A Doctor of the Old School*.

WATSON, THOMAS E. (1856–), an American lawyer, politician and journalist, born in Columbia County, Ga. He studied at Mercer College, Macon, taught school for a time and was admitted to the bar in 1875. After practicing for a time in Thompson, Ga., he became a member of the state legislature, and was elected to Congress in 1891 as a Populist. He was defeated in the two following elections. During his term he fought for and secured the first appropriation for rural free delivery. In 1896 he was the Populist candidate for Vice-President of the United States, and in 1904 was the candidate of the same party for President. Though he made an active campaign, he received no electoral votes. He edited, at New York, *Watson's Jeffersonian Magazine* and *The Weekly Jeffersonian*. Among his published works are *Life of Napoleon*, *Life of Thomas Jefferson*, *The Story of France*, *The Roman Catholic Hierarchy* and *The House of Hapsburg*.

WATSON, WILLIAM (1858–), an English poet, author of *Purple East*, containing his best sonnets; *The Year of Shame*, an indictment of England's policy in the Orient; *The Hope of the World; Studies in Poetry and Criticism*, and other works.

WATT, *waht*, in electricity the unit of power or measure of the rate of current, so named in recognition of James Watt, the inventor. It is equal to the pressure of one volt with a flow of one ampere per second. A thousand watts form a kilowatt, the measure of power; in most common use 746 watts equal one horse power.

WATT, *waht*, JAMES (1736–1819), a Scottish engineer, celebrated for the improvements he made in the steam engine. He was born at Greenock, Scotland. Having determined to adopt the trade of making mathematical instruments, Watt went to London, at the age of eighteen, to learn the art; but ill health compelled him to return after only a year's apprenticeship. Shortly after his return he was appointed maker of mathematical instruments for the University of Glasgow. Resigning this position after a time, he worked as a civil engineer, making surveys for canals and harbors. In 1764 while repairing a Newcomen engine, Watt made experiments which resulted in the improvements that have made his name famous. In partnership with Matthew Boulton, a Birmingham manufacturer, he founded, at Soho, a factory where, in 1774, was completed the prototype, in principle, of the steam engine of to-day.

JAMES WATT

Watt was a fellow of the Royal Societies of London and Edinburgh and a member of the National Institute of France. Besides improving the steam engine, he invented or improved a variety of mechanical appliances, including a letter-copying press, a machine for reproducing sculpture and a fuel-saving furnace. See STEAM ENGINE.

WATTEAU, *vah to'*, JEAN ANTOINE (1684–1721), one of the most celebrated painters of the eighteenth century, born of humble parents, in Flanders. At eighteen he went to Paris, where after years of struggle in obscurity he became a court favorite. In time his reputation extended throughout

Europe. His name is chiefly associated with a style characterized by ideal gardens and woodlands peopled with richly costumed men and women, who disport themselves with all the airs and formal graces of the times. In 1717 Watteau became a member of the Academy. He was a favorite of Frederick the Great, and to-day the finest collection of Watteaus in the world is owned by Germany.

WATTERSON, *wat' tur son,* HENRY (1840–), for nearly fifty years one of the most influential newspaper editors in the United States. He was born at Washington, D. C., was privately educated and at the age of twenty joined the staff of the Washington *Star.* He removed to Nashville in 1861, where he edited the *Republican Banner,* and during the Civil War he served in the Confederate army. The *Republican Banner* was revived after the close of the war; and in 1867 Watterson went to Louisville, where he founded the *Journal,* later consolidated with the *Courier,* and then known as the *Courier-Journal.* He steadily refused office, but in 1876 he accepted a seat in Congress, serving with distinction, but declining reelection. From 1872 to 1892 he was a delegate at large to every Democratic national convention, and he was until his retirement from active service in 1918 a power in national politics, through his editorials in the *Courier-Journal* and his strong personality. In 1919 he published *Looking Backward,* a series of sketches in which he reviewed in a personal vein his country's history for five decades.

WATTS, *wots,* GEORGE FREDERICK (1817–1904), an English artist, famous for his portraits, but chiefly for allegorical and symbolical pictures in which he attempted to show the power of love and the ugliness of greed. Watts was born in London, and at the age of thirty he married the actress Ellen Terry. The marriage was soon annulled. Among his more important pictures are *Love and Death,* now in Washington; *Life's Illusion, The Window Seat* and *Sir Galahad.* He is one of the most subtle and powerful of portrait painters, among his successful work in this line being portraits of Tennyson, Millais, Sir Frederick Leighton, Cardinal Manning and Browning.

More than almost any other artist, he devoted himself to the artistic interests of the nation, gratuitously decorating the dining hall of Lincoln's Inn and giving the best of his work to form the nucleus of the National Gallery of British Art. The principles of his art are best summed up in his own words, "The end of art must be the expression of some weighty principle of spiritual significance, the illustration of great truth."

WATTS, ISAAC (1674–1748), an English clergyman and writer, noted for his hymns. He was born at Southampton. After tutoring six years, he became minister of the Independent Church in Mark Lane, in 1702. A severe illness ended this engagement and Watts spent the remainder of his life with Sir Thomas Abney, at Theobalds. Among his works are *Divine and Moral Songs for Children, Hymns and Spiritual Songs, Psalms of David Imitated and Horae Lyricae,* the last three containing nearly five hundred hymns and versions. "When I survey the wonderous cross" is said to be Watts's finest hymn, and with Ken's *Morning Hymn,* Charles Wesley's "Hark, the Herald Angels" and Toplady's "Rock of Ages," it stands at the head of all hymns in the English language.

WAUKEGAN, *waw ke' gon,* ILL., the county seat of Lake County, thirty-five miles north of Chicago, on Lake Michigan and on the Chicago & North Western and the Elgin, Joliet & Eastern railroads. It has an excellent harbor, with boat service to Chicago, Milwaukee and other lake ports, and is the center of a large trade in farm and dairy products. Industrial establishments include steel and wire works, brass and iron foundries, tanning factories, a sugar refinery and manufactories of locks, boats, doors, motors and ladies' garments. Notable features are the government harbor and piers, Federal building, courthouse, Carnegie Library and Masonic Temple. Sheridan Road, an automobile boulevard extending from Chicago to Milwaukee, passes through Waukegan; on this road just north of the city is the Bowen Country Club, the summer camp of Hull House, Chicago. The Great Lakes Naval Training Station is located three miles south of the city.

Waukegan was settled by New England and Southern frontiersmen interested in establishing a shipping point for grain. It is said to be older than Chicago, and at one time it promised to surpass the younger settlement. It was incorporated as a village

in 1849, became a city in 1859, and adopted the commission form of government in 1911. Population, 1910, 16,069; in 1917, 20,917 (Federal estimate).

WAUKESHA, *waw' ke shaw*, Wis., the county seat of Waukesha County, seventeen miles west of Milwaukee, on the Fox River and on the Chicago, Milwaukee & Saint Paul, the Chicago & North Western and the Milwaukee, Saint Paul & Saulte Sainte Marie railroads. It has numerous mineral springs, and its principal industry is the bottling and shipping of water. There are also structural steel works, steel-bridge and malleable-iron works, plow and motor works and canning factories. Carrol College and the state industrial school for boys are located here. Other features of interest are the Rest Haven sanitarium, the courthouse, a public library and three parks. The place was settled in 1836, and incorporated in 1848. Population, 1910, 8,740; in 1917, 9,704.

WAUSAU, *waw' saw*, Wis., the county seat of Marathon County, 180 miles northwest of Milwaukee, on the Wisconsin River and on the Chicago & North Western and the Chicago, Milwaukee & Saint Paul railroads. It is surrounded by a lumbering, agricultural and dairying section, which also has extensive granite quarries. The river furnishes good water power, and the city maintains sawmills, sash and blind factories, machine shops, box factories, canneries and flour mills establishments. A county training school for teachers, a county school of agriculture and domestic science, an asylum for the insane and a tuberculosis sanitarium are located here. The city also has a public library, a hospital, a fine courthouse and a city hall. The place was settled in 1842, and was at first known as Big Bull Falls. It was chartered as a city in 1872. Population, 1910, 16,560; in 1917, 19,666.

WAVES, *wayvz*, disturbances in matter, which result in carrying force from point to point, often to a great distance. The most familiar *visible* waves are those produced by the wind on the surface of a body of water. *Invisible* waves are those minute vibrations produced within a body, by striking it or by some other means of agitation. These waves are manifest through their results, as in sound, heat and light.

When waves are produced by the disturbance of a small quantity of liquid, as by throwing a pebble into a pool, they appear to advance from the point where the pebble strikes, in widening, concentric circles, the height of the wave decreasing gradually as the circle enlarges. There is, however, no progressive motion of the liquid itself, as may be seen by watching a body floating on its surface. This is true of large. as well as small, waves, and the waves of the ocean, which sometimes reach a height of forty feet or more, do not cause the water to move forward. Breakers are caused by the friction of the water on the bottom of the sea, which retards the motion at the base of the wave and causes the crest to break over it. They never occur in deep water.

WAX, a solid, fatty substance derived from animal and vegetable sources. A by-product of petroleum, paraffin, is a similar product, having a number of uses. The chief kinds of animal wax are *beeswax* and *spermaceti*. The first is secreted by bees to build their cells. It is used in the arts for modeling, and in making ointments, plasters and candles. Spermaceti, a constituent of whale oil, is used for making toilet creams and candles. A wax secreted by the pores of sheep and extracted from the cut wool is used in dressing leather. Myrtle wax, palm wax and Japanese wax are of vegetable origin. From myrtle wax bayberry candles are made. Vegetable wax is the basis of the finest Japanese lacquers.

WAX MYRTLE, or **WAX TREE**. See CANDLE-BERRY.

WAXWING, a handsome singing bird, distinguished by its high, pointed crest, yellow band across the end of the tail and red spots on the wings, which have the appearance of sealing wax. The body plumage is reddish-brown above, yellowish underneath. The *cedar waxwing* is found in nearly every part of North America, and may be seen in summer as far north as Southern Alaska. It feeds on insects

WAXWING

and fruits, and nests in trees. The eggs are putty-colored, with black specks. The *Bohemian waxwing,* a familiar bird in both eastern and western hemispheres, also migrates to high latitudes in the nesting season, traveling, like the cedars, in small flocks.

WAY BILL. See BILL OF LADING.

WAY'CROSS, GA., the county seat of Ware County, ninety-seven miles southwest of Satilla River and on the Atlantic Coast Line, the Waycross & Southern, the Waycross & Western and the Atlanta & Birmingham railroads. It is the center of a fertile section, in which are gown cotton, fruit, live stock, pecans and sugar cane. There is abundant timber, and the city has large saw and planing mills. Other industrial establishments are railway shops, an overall factory, a packing plant, a turpentine plant, a cotton gin, a cold storage plant and a fireproof warehouse for cotton. There are a Federal building, a courthouse, a Y. M. C. A., Kings Daughters' Hospital and Baptist Institute. Population, 1910, 14,485; in 1917, 20,737 (Federal estimate).

WAYNE, *wane,* ANTHONY (1745–1796), an American revolutionary leader, called "Mad Anthony" Wayne because of his brilliant bayonet charge on Stony Point in 1779, the most daring feat of the Revolutionary War. He was born at Easton, Pa., and was prominent in the patriotic movements before the Revolution. He served in the Pennsylvania legislature and in 1775, when the war broke out, he joined the army, was colonel of a volunteer regiment, and early in 1776 accompanied the expedition to Canada. For some time he was in command of a fort at Ticonderoga, and he afterward took part in the battles of Brandywine, Germantown and Monmouth. He captured Stony Point with a light infantry corps and became a popular idol; this was one of the romantic episodes of the war.

After the surrender of Cornwallis at Yorktown, at which he was present, he served for a time in Georgia and South Carolina. After the close of the war he held a number of civil offices in Pennsylvania and then removed to Georgia. In 1791 and 1792 he represented Georgia in Congress. In 1792 he was made general in chief of the United States army and was given command of an expedition against the Indians in the West. He defeated them at Fallen Timbers in August, 1794, and he concluded with them the Treaty of Greenville, by which the United States gained a large tract of land.

WEALTH, *welth,* a term used in economics to signify all material goods that have value. There are three essential qualities for objects classified as having value; they must be useful, must be limited in supply, and must be transferable. Gold, for example, comes under the category of wealth, for it has utility, it is produced in limited quantity, and it can be taken from one place to another. Health, while it is of priceless value to the possessor, is not wealth, for it is not a material thing. The possession of health is an aid to one who seeks to acquire wealth, but is not wealth itself, according to the terminology of economics. The same statement can be made of intelligence, physical strength, skill, education, and other intangible possessions that are in themselves of great value to man.

Circumstances alter the relative value of objects classified as wealth. On a desert island a shipwrecked sailor with a belt of money would consider food and drink of far greater value than his gold. If he were rescued and taken to a country where food was plentiful his money would be again classified as wealth. The four phases of wealth —production, exchange, distribution and consumption—are fundamental in the consideration of the economic structure of the world.

Related Articles. Consult the following titles for additional information:

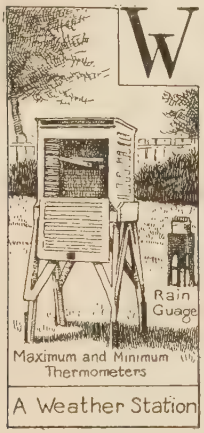
Capital	Profit Sharing
Consumption	Socialism
Credit	Supply and Demand
Economics	Wages
Money	

WEASEL, *we'zel,* a small, carnivorous animal, a native of almost all the temperate and cold parts of the northern hemisphere. The body is extremely slender, the head small and flattened, the neck long and the legs short. It preys upon mice, birds and other small animals and is very destructive to poultry. The weasel is usually nocturnal in its habits. It is a fine hunter, having a very keen scent and sharp sight, and, being unwearying in pursuit of its victim, it often wears to exhaustion animals larger than itself. Several species are common in the United States, and others are found in most parts of the temperate zones. The *long-tailed,* or *New York, weasel* is one of the most familiar species in North America. It is dark brown above and white beneath, and in winter in cold climates

it turns pure white, except for the tip of the tail, which is black.

Related Articles. Consult the following titles for additional information:

Ermine
Ferret
Polecat
Sable



A Weather Station

WEATHER BUREAU, *weth'ur bu'ro,* a government bureau maintained by all civilized countries for the purpose of studying weather conditions and giving useful information thereon to the people. Mark Twain once said, "People have been talking about the weather for years, but nothing has ever been done about it." As a matter of fact, considerable has been done about it by the weather bureaus. Nobody can ward off a storm sure to be destructive to crops, but the approach of such a storm can be foretold and precautions may be taken to lessen its menace. Warnings of floods, frost predictions, advice on rainfall, recommendations as to irrigation needs—these and many other practical suggestions come from the weather bureaus and help to moderate the tyranny of the weather, which it must be confessed, is a force for good and for ill in the life of nearly every person. The United States Weather Bureau is typical of those of other countries, and in efficiency and in the practical service it renders it is one of the best in the world.

United States Weather Bureau. Previous to the Civil War several attempts to maintain a systematic weather service were made, but on the breaking out of that conflict all these were abandoned. The United States Weather Bureau was organized in 1870 as a division of the signal service in the War Department. The organization was under the supervision of General Albert J. Myer, chief signal officer of the army, and it was adopted by Congress as a national service. Under General Myer's management, *signal stations,* as they were then called, were established throughout the country and were under the direction of a corps of trained weather observers. In 1891 the weather department of the signal service was made a bureau of the Department of Agriculture.

The Weather Bureau is organized into a number of divisions, each of which carries on its special line of work. The most important of these are the following:

(1) **The Forecast Division,** which receives twice a day reports from stations in the United States, the West Indies, Europe, Asia, Alaska and Hawaii, and makes charts showing the conditions embodied in these reports. These charts are the regular weather maps of the bureau and include forecasts for the entire northern hemisphere. Their predictions are for twenty-four or forty-eight hours.

(2) **The Division of River and Flood Service,** which obtains information concerning the amount of rainfall, ice and snow in the basins of the principal rivers, whether navigable or not. The information which this division gives is for facilitating commerce and especially for protecting river valleys from floods, of which it aims to give ample warning.

(3) **The Division of Climate and Crops.** This division maintains a staff of voluntary observers, who give reports of the temperature, rainfall and other important data pertaining to the welfare and growth of crops in different parts of the country. This information is published in weekly and monthly crop bulletins, which are regarded as the highest authority on crop conditions of the country and are of the greatest benefit to agricultural interests.

(4) **Other Divisions.** These include divisions which have charge of examining and testing all instruments used, a division of records and divisions of telegraphy, publications and supplies.

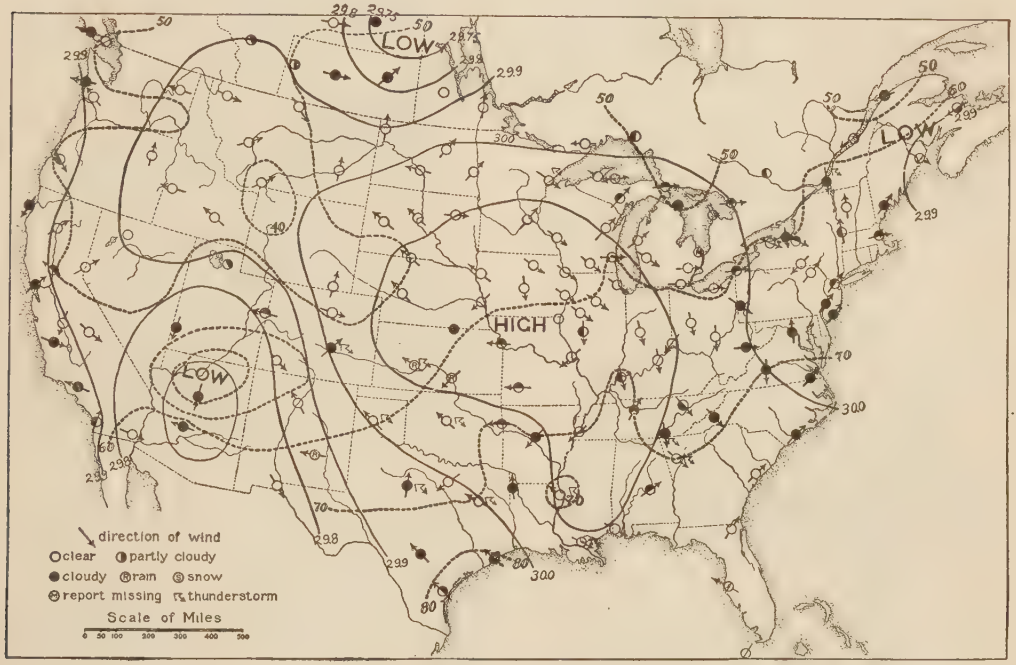
The official organ of the bureau is the *Monthly Weather Review,* each issue of which contains statements of the weather conditions, their influence on crops in different parts of the country and various other articles pertaining to the work of the bureau and of general interest to the public.

Observing Stations. There are over 200 regular meteorological stations in the United States. Each of these is in charge of trained observers and is equipped with a full set

FIG. 1

of instruments. These observations are taken at 7:45 A. M. and 7:45 P. M. Washington time, and the results are telegraphed to the central station of the district and to the office at Washington, from each of which maps are issued and reports transmitted to the country. These stations and numerous

other substations indicate the local weather conditions by the display of signals. A white flag (1 in Fig. 1) indicates fair weather. A flag with the upper half white and the lower half blue (2 in Fig. 1) indicates local rain or snow. A full blue flag (3 in Fig. 1) indicates general rain or snow. A triangular blue flag (4 in Fig. 1) indicates



UNITED STATES WEATHER MAP

change of temperature. When placed below another flag it indicates colder, and when placed above, warmer. A white flag with a black square in the center (5 in Fig. 1) indicates a cold wave, which means a drop in temperature of from 15° to 20°.

The direction of winds is indicated by triangular flags, which are generally used in connection with storm warnings. The warning flag is red, with a black square in the center. When this is displayed with a triangular white flag above it, it indicates a storm with wind from the northwest. With the white flag below, it indicates a wind from the southwest (see Fig. 2). The warning flag with a dark

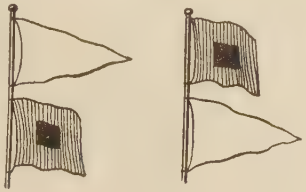


FIG. 2

triangle above indicates storm with wind from the northeast, and with the dark triangle below, storm with a wind from the southeast (see Fig. 3). The hurricane warning consits of two red flags with black centers, one above the other (see Fig. 4). Forecasts are also displayed in post offices and other public places, and in some sections of the country they are given by a series of signals by the whistles of locomotives.

Weather Charts. Through telegraphic reports received from all parts of the country twice each day the United States Weather Bureau constructs, twice daily, weather charts showing areas of high and low barometric pressure, the former generally indicating centers of storm disturbance; the general temperature of the different sections of the country, those of equal temperatures being connected by lines called isotherms;

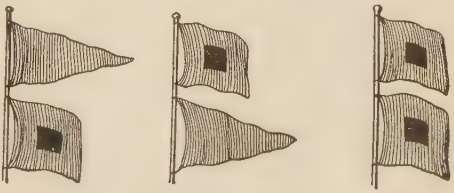


FIG. 3 FIG. 4

the direction of winds and the condition of the atmosphere, the latter being denoted as cloudy, partly cloudy or clear, and including presence of rain, snow or thunderstorms. By comparing the map under construction with previous maps and with the latest reports from the various stations, the forecaster is able to tell in what directions the areas of low pressure are moving, and at what speed, and can thus predict, with reasonable certainty, changes of weather in all parts of the country. As to changes in temperature and the velocity and the direction of winds, information furnished by the bureau is almost never far wrong, but so many influences affect the condition of the atmosphere that it is more difficult to predict

SOCIABLE WEAVER BIRD'S NEST

changes in this respect. The weather map shown here is an exact copy of one furnished by the government.

Canadian Bureau. In the Dominion of Canada the Meteorological Service, a division of the Department of Marine and Fisheries, performs the same tasks as the American Weather Bureau. The superintendent of the service has his headquarters at Toronto, Ont., and acts also as director of the Toronto Magnetic Observatory.

Related Articles. Consult the following titles for additional information:

Climate	Isobars	Rainbow
Cyclone	Isothermal Lines	Snow
Frost	Meteorology	Storms
Hail	Rain	Tornado
Humidity		Wind
Hurricane		

WEAVER, *we'vur,* JAMES BAIRD (1833–1912), an American political leader, born at Dayton, Ohio. He graduated from the law school of Ohio University in 1854, served in the Civil War and was brevetted brigadier-general at its close. He removed to Iowa, entered journalism, as editor of the Iowa *Tribune,* at Des Moines, and became a member of Congress in 1879 and again in 1885. In 1880 he was made the Greenback candidate for President of the United States and in 1892 was the candidate of the People's or Populist party, receiving twenty-two electoral votes.

WEAVER, BIRD, *we'ver,* a small bird resembling the finch, with pointed wings, a

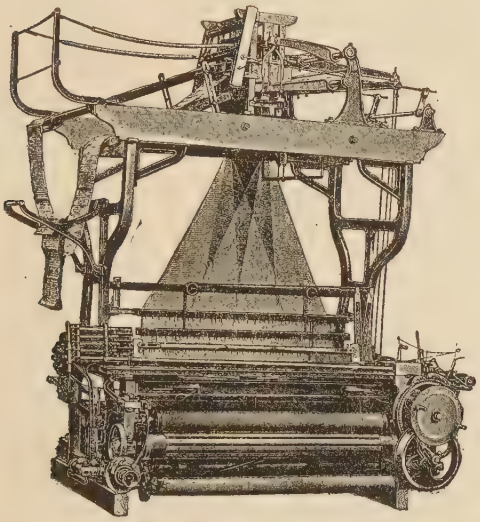
WEAVER BIRD

sharp, conical bill and unusually long claws. The name has reference to the bird's manner of building its nest, which is a wonderful structure of woven vegetable substances. The form and workmanship of the nests vary with the several species. The *yellow weaver,* or *baya,* of India, builds a long, bottlelike nest, and hangs it from a slender branch of tree or shrub, often over the water, where it is impossible for anything but a bird to enter. The *sociable weaver birds* build a large dome-shaped structure, or roof, in the forks of branches, and underneath this common roof many families build their nests, each with a separate entrance. While all members of the community work on the roof, each pair works alone on its own nest. See BAYA.

BAYA'S NEST

WEAVING, *we'ving,* the art of making cloth by means of a loom, from threads or yarn. It is not known when weaving was first practiced, but it is certain that it is one of the earliest of the arts, and it seems probable

that hand looms were invented independently by several of the ancient nations. The Greeks and Romans brought the weaving art to a high degree of perfection. Among modern countries Italy was the first to acquire fame for the manufacture of woolen



JACQUARD LOOM

and cotton cloths. France, England, Germany and the United States later developed extensive weaving industries. Since the fibers of wool are much more easily worked than are those of cotton or flax, woolen cloth has always been made among the more primitive peoples before they attempted fabrics of linen or cotton.

In weaving, two sets of threads are necessary, one running lengthwise of the cloth, and called the *warp,* the other running crosswise, and called the *weft,* or *woof.* The threads of the warp are arranged on the loom by being wound on a yarn beam, at the back, and stretched evenly to the front, where they are fastened to another beam, upon which the cloth is to be wound. In passing from one beam to the other, the warp threads are laid through the *heckles* and also through a comb on the batten. In laying the warp, every other thread passes through one heckle, and the alternate thread passes through the other. The weft is wound upon bobbins, which are placed in the shuttle, by means of which the weft is laid in position. Weaving by hand loom includes the following steps: (1) Pressing a treadle, which is connected with the heckles by a cord that passes over a pulley on the top of the loom. This spreads the threads of the weft, raising one-half and lowering the others, so that they form an angle called the *shed.* (2) Throwing the shuttle across the warp and thus laying the thread of the weft in position. (3) Striking this thread with the batten, so as to drive it close up against the one previously laid. (4) Springing down the opposite treadle and thus preparing the web for the next thread of the weft.

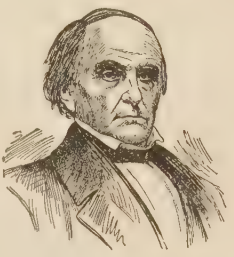
Weaving in these times is almost exclusively done by power looms, operated by steam or electricity. Simple as the hand loom is, it contains the elements of all modern looms. The complexity of the pattern may be increased by placing more than two frames in the heckle and dividing the weft into more parts, also by inventions which raise certain threads in the warp at one time and certain others at another. An invention known as the *Jacquard* loom operates upon this plan. Any number of cords can be used, so that a pattern of any degree of complexity is possible, and since all cords are tied together in the form of an endless chain, the pattern may be repeated indefinitely.

WEBB CITY, Mo., a city in Jasper County, five miles northeast of Joplin, on the Frisco and the Missouri Pacific railroads. It is the center of the zinc and lead mining district of Southwestern Missouri. Mining plants in the vicinity number about two hundred, and there are in addition machine shops, foundries, a cement block factory and a brick and tile plant. The city has a Federal building, a hospital and a public library. It was settled in 1873 and incorporated in 1876. Population, 1910, 11,817; in 1917, 14,082 (Federal estimate).

WEB'ER, Karl Maria Friedrich Ernst von (1786–1826), a German composer, born at Eutin in Holstein. His father was a musician and gave him a good musical education. At the age of fourteen he wrote an opera, and in 1803 he visited Vienna, where he became acquainted with Haydn. He procured a musical directorship in Breslau, on which he entered in 1804, leaving it only to accept, successively, several more important positions. In 1820, at Berlin, he produced *Der Freischütz,* the most celebrated of his compositions. It was performed in London and Paris two years later. In 1822 *Euryanthe* was brought out, and in 1826 Weber visited London to superintend the production of *Oberon,* which he had com-

posed for Covent Garden Theater. Shortly after its enthusiastic reception, the composer died in London. Besides the operas mentioned, Weber wrote a large number of works for the piano, notably the *Invitation to the Dance* and the *E flat major Polonaise.* He was the forerunner, in style, of Wagner, whom he strongly influenced.

WEBSTER, DANIEL (1782–1852), American orator and stateman, born in the township of Salisbury, N. H. His father was a backwoods farmer, who had previously been a hunter and soldier, and Daniel owed his first education to his mother. Later, in the intervals of farm work, he attended village school, and when he had reached the age of fifteen, his father made some generous sacrifices to send him to Dartmouth College, where he remained four years. After studying privately and in a Boston law office, he entered the law in 1804, settled at Portsmouth, N. H., and prospered.



DANIEL WEBSTER

Webster at first took little interest in politics, but in 1812, having already established a commanding reputation, he was elected to Congress by the anti-war party. He was placed on the committee of foreign affairs, and his maiden speech, delivered on June 10, 1813, upon the Berlin and Milan decrees, took the House and country by surprise by its display of rhetorical power and wealth of historical knowledge. His subsequent speeches on the increase of the navy, which he warmly recommended, and the repeal of the embargo, placed him in the first rank of debaters.

In 1816 Webster retired for a time from political life, removing to Boston to devote himself to his profession. For nearly seven years afterward, with a single exception, he filled no public office, but as an advocate and counselor achieved a preëminent position at the American bar. His strongest powers were displayed in arguing points of constitutional law, and his achievements in this direction drew upon him the attention of the whole country. In 1820, on the celebration of the bicentenary of the landing of the Pilgrim Fathers, he delivered an oration which added greatly to his fame as an orator, and he continued to gain in public esteem through other great addresses, notably those at the laying of the cornerstone of Bunker Hill Monument in 1825 and at the memorial service for Adams and Jefferson in 1826.

In 1822 he was elected to Congress, and was reëlected in 1824 and 1826. At the end of his last term he was chosen Senator for Massachusetts. In January, 1830, he delivered a remarkable speech in favor of the nationalist view of the Constitution, in reply to a speech by Robert Y. Hayne of South Carolina. The address created a sensation throughout the Union and probably was more widely circulated throughout the country than any other in previous American history. Webster was strongly opposed to the nullification movement of Calhoun and the South Carolina school, and his eloquence in support of Jackson's energetic measures did much to prevent secession. In 1836 he was an unsuccessful candidate for the Presidency, and from 1841 to 1843 was Secretary of State under Harrison and Tyler. The chief event of this period was the negotiation of the famous Webster-Ashburton treaty with England, which was equally advantageous and honorable to both parties.

Webster generously supported Clay's candidacy for the Presidency in 1844; and was himself an unsuccessful aspirant for the Whig nomination in 1848. In 1845 he was reëlected to the Senate, and in the struggle over the admission of Texas and California he strongly favored the Northern, or anti-slavery, side. Afterward, however, when public excitement had reached a dangerous height, he supported a policy of compromise, and March 7, 1850, he made a speech in favor of obedience to the Fugitive Slave Law. The same year he was appointed a second time Secretary of State, which office he held till his death.

Webster's guiding principle in politics was the preservation of the Union, for which he was ready to make all sacrifices, opposing the nullifiers, on the one hand, and the abolitionists, on the other. One of his best remembered utterances is that from the *Reply to Hayne,* ending with the exclamation, "Liberty and Union, now and forever, one and inseparable!"

Related Articles. Consult the following titles for additional information:

Calhoun, John C.
Clay, Henry
Nullification
Webster-Ashburton Treaty

WEBSTER, Henry Kitchell (1875–), an American novelist, born at Evanston, Ill., and educated at Hamilton College. After graduation he taught English for a year in Union College and then began the publication of stories that soon gained for him a place as one of the most popular of American story writers. Among the stories that first brought him into prominence were *The Short Line War, Comrade John* and *Calumet K,* all written in collaboration with Samuel Merwin. Novels of which he is exclusively the author are *The Story of a Corner in Land, Roger Drake, The Sky Man, The Ghost Girl, The Butterfly, Real Adventure, The Thoroughbred, The Painted Scene* and *An American Family.*

WEBSTER, Noah (1758–1843), an American lexicographer, author of the original *Webster's Dictionary* and of *Webster's Spelling Book.* He was educated at Yale and prepared for the law, but gave it up for teaching. His experience in schools led to the composition of his *Spelling Book,* which was published in 1784, and of which it is said that 62,000,000 copies have been sold. About 1807 he began work upon his *American Dictionary of the English Language.* In preparing this work he visited England and worked for some months at Cambridge. The first edition of the dictionary was finished in 1828, and a second edition was published by Webster in 1840. This work was the basis of the standard *Webster's International Dictionary.*

WEBSTER-ASHBURTON TREATY, a treaty concluded at Washington in 1842 by Daniel Webster, then Secretary of State, and Lord Ashburton, minister of Great Britain to the United States. It defined the northeastern boundary between the United States and Canada, which for years had been a source of irritation between the two countries.

WEDGE, *wej,* one of the so-called mechanical powers used in the construction of machines, formed of a combination of two inclined planes. Wedges of wood or metal are used for splitting various substances or for exerting strong pressure in a small space. The axe, with its thin and its broad edge, is one application of the principle of the wedge. See Mechanical Powers.

WEDGWOOD, *wej'wood,* **WARE,** a superior kind of glazed pottery, capable of taking the most brilliant and delicate colors. It is usually decorated with classic designs, often in relief upon a solid ground. It is used not only for the table, but also for ornament; and, owing to its hardness and property of resisting the action of all corrosive substances, it is commonly used for mortars in laboratories. The ware was named after the inventor, Josiah Wedgwood. See Pottery.

Josiah Wedgwood (1730–1795), one of the greatest of English potters, was born at Burslem, of a family of successful potters. At the age of eleven he began making pottery on a wheel. The loss of a leg compelled him to give up this work, and he afterwards became head of his own pottery works and the most famous of English potters. Wedgwood made many improvements in the manufacture of earthenwares, and all subsequent work in this field has reflected his powerful influence.

WEDNESDAY, *wenz'day* (Woden's day), the fourth day of the week.

WEED, Thurlow (1797–1882), an American journalist, born at Cairo, N. Y. At the age of twelve he began to learn the printer's trade in Catskill, N. Y., and ten years later he was editing. He founded the Onondaga County *Republican,* and in 1824 became editor and owner of the Rochester *Telegraph.* He was elected to the legislature in 1826, and at the close of his second term he established the Albany *Evening Journal,* a Whig paper, which he edited for thirty-three years. During the Civil War, at the instance of President Lincoln, he was sent to Europe on a semi-official mission, and he did much to remove the misapprehensions as to the war, and to induce foreign governments to refrain from interference. In 1867 he became editor of the New York *Commercial Advertiser,* which position he resigned on account of failing health. He was the author of *Letters from Europe and the West Indies* and an *Autobiography.*

WEEDS, a term applied to plants growing wild in uncultivated grounds and in most cases very troublesome. Many plants when grown and cultivated in gardens, as the goldenrod and the dandelion, are classed as flowers, while the same plants, running wild in uncultivated ground, are considered as weeds. The chief ways in which weeds are injurious are: (1) They increase the labor necessary to cultivate the soil; (2) they take up food from the soil, which should go to useful plants; (3) their foliage smothers the young

plants; (4) they sometimes are poisonous to cattle. Care should be taken to eradicate them as soon as they begin to grow. There are various ways to prevent their growth, different weeds requiring different methods. Planting of pure seed, diligent tillage of the soil, rotation of crops, cultivation of all open land with crops, are some of the means used. Some weeds while young can be destroyed without injury to the crop, by spraying the field with certain chemicals, called *herbicides*. Weeds are often of service to a farmer, in aiding him to know the needs of his land, since many kinds grow only where the conditions are peculiarly adapted to them. See HERBICIDES.

Related Articles. On page 517, in the article Botany, is a further discussion of the subject of weeds. For descriptions of the common weeds, consult the following titles:

Abutilon	Dandelion	Mullein
Agrimony	Dock	Pigweed
Bindweed	Feverfew	Plantain
Botany	Fleabane	Ragweed
Burdock	Goosefoot	Sand Bur
Canada Thistle	Gromwell	Sow Thistle
Cocklebur	Indian Mallow	Stramonium
Cow Parsnip	Milkweed	Thistle

WEEK, a period of seven days, one of the conventional divisions of time, the origin of which is doubtful. Among the ancient nations who adopted the week as a division of time, are the Chinese, the Hindus, the Egyptians, the Chaldeans, the Jews, the Persians and the Peruvians. In some cases the name has been applied to cycles of time other than that of seven days. The nations with whom the weekly cycle has been traced with certainty to the greatest antiquity are the Egyptians and the Hebrews. The use of the week was introduced into the Roman Empire from Egypt, about the first or second century of the Christian Era, and it had been recognized independently of Christianity before the Emperor Constantine confirmed it by enjoining the observance of the Christian Sabbath.

WEEVIL, *we'v'l*, the name applied to a group of very small beetles, most of which have long snouts, slightly curved downward. They are very destructive to the products of agriculture, some of them injuring the plants, others ruining the fruit or seed. With the long snout the insects of some species bore into nuts, grain or fruit and eat out the interior. Sometimes they deposit their eggs in the fruit, or seeds, so that the larvae will have food when hatched. In this way weevils often hatch out in meal, flour, rice and such food stuffs, spoiling them.

The *boll weevil*, which attacks the cotton boll, is one of the worst pests in the United States, having caused enormous losses to Southern farmers. It is a grayish weevil one-fourth of an inch long. It lies torpid in winter, and when the cotton comes up feeds on the leaves and blossoms. The eggs are deposited in the cotton boll, which the maggots destroy. There are four or more generations each summer. The *alfalfa weevil* is another species of considerable economic importance, and the United States Department of Agriculture has employed stringent measures to have it checked. Peas and beans are among other crops subject to weevil attack. The insects breed in the growing pod and also in stored beans and peas. When infested, the beans float in water and should not be planted. See BOLL WEEVIL.

WEIGHING, *way'ing*, **SCALE**, a mechanical contrivance for ascertaining the weights of substances. The simplest form of the weighing machine is the balance formerly used by grocers. It consists of a horizontal beam pivoted in the middle and having at one end a deep pan, in which was placed the article to be weighed, and at the other a horizontal disk. Pieces of iron of graduated size and ranging in weight from an ounce or less to several pounds were used on the disk to balance the article to be weighed. A modification of this scale is the unequal beam balance; based on the principle of the lever. The horizontal beam is not pivoted at the middle point, but near one end; the weight to be determined is placed upon the shorter end and is balanced by a much smaller weight at the long end.

The *platform scale* is a typical example. It consists of a hinged platform, set above a stationary platform, which sinks under a weight and presses upon a lever underneath. The lever is connected with a vertical rod attached to the short end of the horizontally-pivoted beam already described. The longer end, or lever, of the beam is marked off in a graduated scale. The article to be weighed is placed on the platform, which sinks under the weight, pressing upon the lever, which conveys the pull to the vertical rod connected with the beam. The weight on the long end of the beam is moved along the scale until it balances with the weight on the platform. The weight of the article on the platform is indicated by the mark in pounds at which the weight balances. A

weight of one pound on the lever may be made to balance with ten, a hundred or even a thousand pounds or more on the platform. Some of these scales are even built to weigh heavy guns and locomotives.

Among the most recent inventions of scales is a complicated device which not only weighs the goods but also computes the price of fractions of a pound.

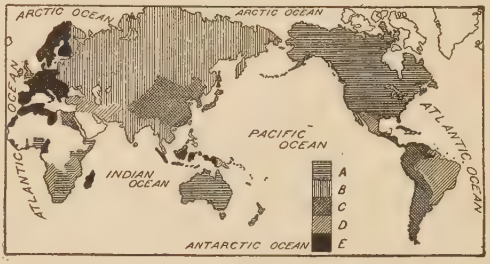
WEIGHT, *wayt,* the measure of the force by which any body or a given portion of any substance gravitates or is attracted to the earth; in a more popular sense, the quantity of matter in a body, as estimated by the balance, or expressed numerically with reference to some standard unit. In determining weight in cases where very great precision is desired, due account must be taken of temperature, elevation and latitude. Hence, in fixing exact standards of weights, a particular temperature and pressure of air must be specified; thus the standard brass pound of Great Britain is directed to be used when the Fahrenheit thermometer stands at 62° and the barometer at thirty inches. See, also, GRAVITATION; WEIGHTS AND MEASURES; METRIC SYSTEM.

WEIGHTS AND MEASURES, the standards used in measuring quantities. Most of the common standard units have been chosen arbitrarily, though efforts have always been made to have the units conform to some natural rule. Evidences of this fact remain in the names of both ancient and modern units, such as the *cubit* of the Egyptians and Hebrews, which was the length of the forearm, and the *foot* of the Greeks, which was the length of a man's foot.

The so-called *English* system of weights and measures, used in the British Empire and the United States, dates from a law passed in 1266 in England, which provided that an English penny should equal in weight 32 wheat corns, taken from the middle of the ear; that 20 pence should make an ounce, 12 ounces a pound, 8 pounds a gallon of wine and 8 gallons of wine a London bushel. Before this time, two pound units had grown up; one, the *Troy* pound, introduced into England by William the Conqueror, weighed considerably less than that before used in England, and its introduction created such dissatisfaction that an average pound of sixteen ounces, now known as the *avoirdupois* pound, was made the standard unit for articles in common trade, while the Troy pound, of twelve ounces, was retained as the unit of weight for gold, silver, gems and apothecaries' supplies.

The units of length, capacity, weight and volume have often varied and are not yet entirely uniform, but the common standards of the English system are as follows: Of length, the *yard,* consisting of 3 *feet,* each foot containing 12 *inches;* 5½ yards equal 1 *rod;* 320 rods equal 1 *mile.* In England, the rod is called a *pole,* or a *perch.* The units of square and cubic measure are respectively the squares and cubes of the linear units, as *square yard, cubic inch,* etc. The *acre,* used in the measurement of land, contains 160 square rods. A *square mile* equals 640 acres.

There are two sets of measures of capacity, one for liquids and one for solids. The unit for liquid measure is the *gallon* of 231



THE WORLD'S WEIGHTS AND MEASURES
Showing the commanding position of the English system

(A) English weights and measures established and fundamental.
(B) English basis for linear measurements.
(C) Local and English prevail, and are closely identical. Metric also used.
(D) Metric, local and English.
(E) Metric prevails, with mixture of old and English.

cubic inches. The quart, one-fourth of a gallon, contains 57.75 cubic inches. The quart is divided into two pints and the pint into four gills. Standard gallon measures are maintained in England, Canada and the United States. The quart in dry measure contains 67.2 cubic inches; eight quarts make one peck and four pecks one bushel. The standard bushel contains 2130.42 cubic inches. The metric system (which see) is used in Europe.

There are numerous terms in use in special occupations, such as the *hand,* a unit used in measuring the height of an animal, and equivalent to about 4 inches; the *fathom* (2 yards), used in measuring the depth of water; the *knot,* or *geographical mile*

(6088.27 feet), used to designate distance at sea; the *chain* (4 rods), used in surveying; the *furlong* (10 chains); a *link* (.01 of a chain); the *ell* (3¾ feet); the *barrel* (31½ gallons); the *hogshead* (2 barrels). In England the barrel equals 36 gallons.

Making and keeping standards of the different units, weights and measures is in the hands of the governments of the respective nations. The work requires the greatest skill and care. In the United States these standards are prepared and kept by the United States National Bureau of Standards. In 1856 the British government sent to the United States two standards of length, which are still preserved. The same year the Treasury Department sent a complete set of weights and measures to the governor of each state. These sets are kept at the capitals of the respective states, and may be used for testing weights or measures whose accuracy is in doubt. Most states appoint inspectors whose duty it is to see that false weights and measures are not used by tradesmen.

Related Articles. Consult the following titles for additional information:

Acre	Furlong	Mile
Apothecaries' Weight	Gallon	Ohm
Avoirdupois	Gram	Ounce
Barrel	Hogshead	Pound
Bushel	Kilogram	Quart
Carat	Kilogrammeter	Scruple
Centimeter	Kilometer	Ton
Chain	Kilowatt	Troy Weight
Cubic Measure	Knot	Volt
Drachma	League	Watt
Fathom	Liter	Weighing Scale
Foot	Mensuration	
	Meter	

WEIMAR, *vī'mahr*, GERMANY, a quaint old city on the River Ilm, about fifty miles west-southwest of Leipzig, in the former grand duchy of Saxe-Weimar. The place is associated in a peculiarly interesting way with the new and with the old Germany. Here, in February, 1919, the first national assembly of the German republic met to establish a government based on democracy; here, in July of the same year, the Treaty of Versailles was ratified.

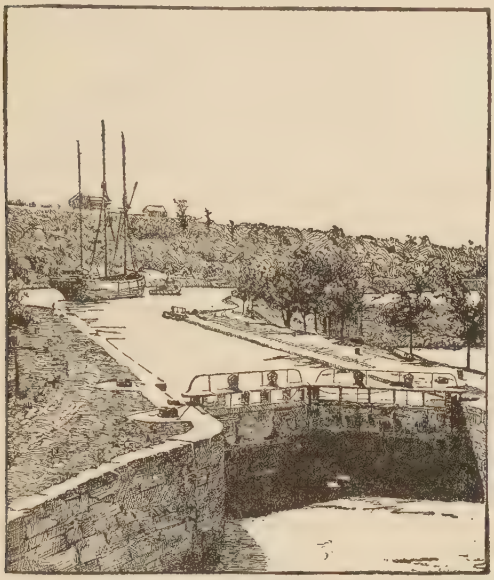
Weimar is famous, too, for its association with the classical epoch of German literature, and it has been called the "German Athens." Goethe, Schiller, Wieland and Herder lived here, and Goethe and Schiller are buried in the cemetery in the southern part of the town. Goethe's house is now the Goethe National Museum, and Schiller's house is also the property of the city and is open to the public. The Goethe-Schiller monument in bronze is in front of the famous court theater, in which the national assembly held its memorable sessions. Another striking building is the grand ducal palace, which was partially constructed under the supervision of Goethe. Weimar has an excellent school system, including an art school, an industrial school, a music school and other special schools. Stoves, straw hats, leather and cloth are manufactured, and the book trade is considerable. Population, about 35,000.

WELD'ING, the process of uniting two pieces of a substance when softened by heat. In the arts the term is restricted to splicing such metals as iron and platinum, though glass and several other substances can be welded as readily as these metals. The simplest method of welding iron is that employed in the ordinary blacksmith shop. The smith hammers the ends of the bars to be welded into a wedgelike form, and heats them white hot, and just as they begin to soften, he covers them with borax or some other flux, to prevent the formation of oxide. The hot ends are then laid together and hammered, the soft surfaces unite, and the joint formed is usually as strong as any other portion of the bar. In large manufactories, electricity is now very generally used for welding, a current of sufficient power to heat and soften the metals being employed. By means of this current, copper can be welded, as well as iron and steel.

WELLAND, ONT., the county town of Welland County, on the Welland Canal and on the Grand Trunk, the Michigan Central, the Wabash, the Pere Marquette, the Canadian Pacific and other railways. Welland has become a railroad and manufacturing center. Especially important are iron and steel products of various kinds, agricultural implements, cordage, cotton goods, chemicals, stoves, tires, concrete and furniture. There is an abundance of water power and natural gas in the vicinity. Welland has a wireless station, two government docks, a court house, a registry office and a park. Population, 1916, 9,500.

WEL'LAND CANAL, a canal on the Canadian side of the Niagara River, connecting lakes Erie and Ontario, and constituting an important link in the chain of canals extending from Lake Superior to Montreal. It was opened in 1833 and in 1871 was enlarged, the cost of improvements together with the original cost amounting to $29,449,-

000. It is 263 miles long, 160 feet wide and fifteen feet deep. Work is now being carried on to increase the width to 200 feet, the



A LOCK ON THE WELLAND CANAL

depth to twenty-five feet and to reduce the number of locks from twenty-five to seven.

WELLAND CANAL
1, New Canal; 2, Old Canal; 3, Feeders.

The estimated cost of these improvements is $30,000,000.

WELL BORING, a method of sinking wells of small diameter, for the purpose of obtaining water, petroleum or natural gas, or for discovering veins of ore.

Well boring is most frequently done by steam power. The machinery consists of a derrick, shaped like a square pyramid, about twenty feet across at the base and from seventy to seventy-five feet high; an engine for operating the machinery; a windlass for raising and lowering the drill; a walking beam, and bits and drills of different sizes and styles. The drill is attached to a rope, which runs over a pulley at the top of the derrick and down to a drum on the windlass. A few feet above the surface, this rope is grasped by a clamp, which is attached to a screw, called the *temper* screw, used to regulate the motion of the drill. The drill is attached to one end of the walking beam, which is operated by the engine and works the drill forcibly up and down. A rotary motion is given the drill by the operator's turning the handle slightly at every stroke. When the drill has descended the length of the temper screw, it is drawn out by the windlass. If the well is dry, water is run into it, and a bucket, called the *sandpipe,* is lowered, to draw out the mud and crushed rock. This bucket is a hollow cylinder, about sixteen feet long, with a bottom that opens upward. As it descends, the bottom opens and allows the cylinder to be filled. When the cylinder is drawn out, the weight of the mud closes the valve, and in this way the well is emptied. As fast as the hole is drilled, it is cased with a steel tube. Bored wells in the oil regions vary in size from five feet to eight feet in diameter. Artesian wells are usually smaller.

Wells may be bored as deep as 3,000 or 4,000 feet. Difficulty in well boring increases with the depth, and deep wells are very expensive. See ARTESIAN WELL; PETROLEUM.

WELLES, *welz,* GIDEON (1802–1878), an American statesman, born at Glastonbury, Conn. He attended Norwich University, and on leaving there became editor of the Hartford *Times.* He was a member of the state legislature from 1827 to 1835, in the latter year becoming state comptroller. From 1846 to 1849 he was chief of the bureau of supplies of the United States navy. He joined the Republican party soon after its organization, and in 1861 was made Secretary of the Navy by President Lincoln. In this post he displayed remarkable executive ability, managing the navy with consummate skill and efficiency during the war. He also served throughout Johnson's administration. In 1872 he supported the Liberal Republican movement, and in 1876 he used his influence for Samuel J. Tilden.

WELLESLEY, *welz'ly,* RICHARD COLLEY WELLESLEY, Marquis (1760–1842), a British general and statesman, brother of the Duke of Wellington. He was educated at Harrow, Eton and Oxford and in 1784 entered

the English House of Commons. In 1797 he was made governor-general of India, and for his suppression of the insurrection of Tippu Sahib of Mysore, and for the capture of Seringapatam, he was made Marquis Wellesley in the Irish peerage. He was also successful in the struggle with the Mahrattas in 1803–1805. His administration in India, which ended in 1805, was one of the most important in the history of British rule there, owing to his financial reforms and his military victories. In 1808, Wellesley was made minister to Spain, and in the following year he became secretary of state for foreign affairs. He was chosen prime minister in 1812, but was unsuccessful in his attempts to form a cabinet. From 1821 to 1828 and from 1830 to 1834 he was lord lieutenant of Ireland.

WELLESLEY COLLEGE, an institution for the higher education of women, founded in 1875 at Wellesley, Mass. The courses are largely elective and lead to the degrees of Bachelor of Arts and Master of Arts. The college is a contributor to the American Schools of Classical Study at Rome and Athens, to the zoölogical station at Naples and to the marine biological laboratory at Wood's Hole, Mass. The faculty includes about 140 instructors; the attendance is about 1,600, and the library contains about 91,000 volumes.

Henry Fowle Durant (1822–1881), the founder of Wellesley College, was born at Hanover, N. H., and educated at Harvard. After completing a law course he engaged in practice in Boston. Subsequently he became a layman preacher. Durant contributed between $1,000,000 and $2,000,000 to Wellesley College.

WELLINGTON, Arthur Wellesley, Duke of (1769–1852), a British general and statesman, the hero of the Battle of Waterloo. He was the son of the Earl of Mornington, and was educated at Eton, at Brighton and finally at the Military College of Angers, in France. In 1787 he received a commission as ensign in the army, and after a rapid series of changes and promotions, he attained, by 1796, the rank of colonel. During 1794 and 1795 he served with his regiment under the Duke of York in Flanders, and in 1797 his regiment was dispatched to Bengal. War had just been declared against Tippu Sahib, and Colonel Wellesley's regiment had an important part in the Battle of Malavelly and the storming of Seringapatam. After this he was appointed to the administration of Mysore, and in 1803 he was given the command of a force engaged in a war against the Mahrattas. His successes compelled the submission of the Mahrattas, and peace was restored on conditions drawn up by the successful general.

DUKE OF WELLINGTON

In 1805 Wellesley returned to England, was shortly afterward elected to Parliament for Rye and in 1807 was appointed secretary of state for Ireland. In August, 1807, he received the command of a division in the expedition to Copenhagen, and he directed the only land operation of importance. In 1808 he attained the rank of lieutenant-general and received the command of a force destined to operate in the north of Spain and Portugal. He was subsequently superseded; but before giving up the command he gained the Battle of Vimeiro over Junot, the campaign being brought to a close with the Convention of Cintra, by which the French agreed to evacuate Portugal. In 1809 Wellesley was appointed to take the chief command in the peninsula, which had been overrun by the French. The passage of the Douro, and the defeat of Soult, which followed, fittingly opened this masterly campaign. For the victory at Talavera (July 28), the first of many which he won in the peninsula, the government raised Wellesley to the peerage, as Viscount Wellington.

Toward the end of 1810 he fought the Battle of Busaco, which was followed by the famous fortification and defense of the lines of Torres Vedras. Before these fortifications the French encamped for months, but they were finally compelled, by lack of supplies, to evacuate Portugal. A little later (in 1811) occurred the victory of Fuentes de Onoro. Early in 1812 Wellington took Ciudad Rodrigo and Badajoz by storm, fought the Battle of Salamanca, accounted one of his most famous victories, and in August entered Madrid. For his brilliant conduct of the campaign, he received the thanks of Parliament and was raised to the dignity

of marquis. Next followed the Battle of Vittoria (1813), battles in the Pyrenees, the capture of San Sebastian and the forced retreat of Soult.

In 1814 a victory over Soult was gained, and in the same year the Battle of Toulouse, in which Soult's best troops were routed, opened the way for the British troops to the heart of France. Napoleon abdicated on April 12, and a few days later the war was brought to a close by the signing of conventions with Soult and Berthier. The triumphant general was created Marquis of Douro and Duke of Wellington and was given the thanks of both houses of Parliament. In July he went as ambassador to France and succeeded Lord Castlereagh as British representative in the Congress of Vienna, and when Napoleon returned, Wellington took command of the army assembled in the Netherlands to oppose him, winning the great victory of Waterloo. On his return to England, after the restoration of peace, he accepted the post of master-general of the ordnance, with a seat in the cabinet of Lord Liverpool. In 1822 he represented Great Britain in the Congress of Verona, and six years later he accepted the premiership, resigning the command of the forces to Lord Hill. The growing discontent throughout the country on the subject of Parliamentary reform, which Wellington steadily opposed, caused the resignation of the government in 1830. He held office under Sir Robert Peel as secretary of state, and in 1846 he helped to carry the repeal of the corn laws, which till then he had opposed. He died September 14, 1852, and was buried in Saint Paul's Cathedral. See WATERLOO, BATTLE OF.

WELLINGTON, NEW ZEALAND, the capital of the dominion of New Zealand, a seaport situated on Port Nicholson, on North Island, 1,280 miles southeast of Sydney, the nearest Australian port. It has a fine harbor and an extensive export and import trade. Manufacturing establishments include flour mills, saw mills, tanneries, foundries, soap and candle works, brick kilns, etc. Important buildings are a government building, a museum, buildings of Victoria University College, and the Wellington branch of the New Zealand Institute. Population, 1911, 64,372; with suburbs, 70,729.

WELLS, HERBERT GEORGE (1866–), one of the most forceful and original of the modern group of English novelists. He was born at Bromley, Kent, of middle-class parents, and was educated at London University. After teaching for several years he began writing for magazines, and in 1895 produced a fantastic romance called *The Time Machine,* which met with instantaneous success. Other stories of a like character followed, including *The War of the Worlds, When the Sleeper Wakes* and *In the Days of the Comet.* In another series of novels of everyday life he finds opportunities to set forth his belief in Socialism, as in *The Research Magnificent* and *The Passionate Friends. Tono Bungay* is much admired for its excellent character drawing, and *History of Mr. Polly* for its näive humor. In *Mr. Britling Sees It Through* Wells produced one of the outstanding books based on the *World War.* Because of his versatility, his gift for story telling and his keen insight into character, he ranks high among contemporary writers.

WELSBACH, *vels'bahk,* **BURNER**, an incandescent gas burner composed of a cone-shaped cotton-gauze mantle of oxides of thorium and cerium. When first lighted the cotton burns away, leaving a skeleton of the oxides. By means of this burner a strong, clear light is obtained with the use of a minimum amount of gas, smoke and unsteadiness of the flame being eliminated.

Karl Welsbach (1858–), inventor of the Welsbach burner, a native of Austria and pupil of Bunsen at the University of Heidelberg. He is the discoverer of the rare elements praseodymium, neodymium and lutecium.

WELWITSCHIA, *wel wich'e a,* a remarkable plant, growing in the dry regions of southern Africa. It consists of a stem, which forms a woody mass, rising not more than a foot above the ground and having a diameter of from four inches to as many feet. From this mass grow two enormous leaves, which become dry and are often split up into shreds, but which do not fall off. Every year several short flower stalks grow up from the base of these leaves, but no other leaves are ever produced.

WENTWORTH, *went'wurth,* THOMAS, Earl of Strafford. See STRAFFORD, THOMAS WENTWORTH, Earl of.

WESLEY, *wes'li,* the family name of two brothers famous as the founders of the religious sect from which the Methodist Church developed. John Wesley, the elder, was the leader of the movement.

John Wesley (1703–1791) was born at Epworth, England, June 17, 1703, a son of the village rector. His mother was a woman of intelligence and piety. The boy attended the Charter-House School and later Christ Church, Oxford, from which he was graduated in 1724. A year after his graduation he was ordained to the ministry, and for a time acted as his father's curate. When in 1729 he returned to Oxford he became associated with his brother Charles and a few other undergraduates in what was derisively called the "Holy Club."

In 1735 he and his brother Charles went with General Oglethorpe to America and for three years the brothers did missionary work among the Indians. John Wesley's preaching was not particularly successful, but the trip marked the turning point in his life, for on the journey over he made the acquaintance of some Moravian Brethren whose simple piety made a deep impression on him. On returning to London he sought the Brethren, and from Peter Böhler, one of their preachers, learned the doctrine of "saving faith." In the summer of 1738 he visited the Moravian leaders on the continent, and this experience confirmed him in his new faith in the saving power of Christ. Returning to England he became associated with George Whitefield, and his real life work as an evangelistic preacher began.

His new methods aroused much opposition, and churches were closed to him. He then began preaching in the open air, gaining a large number of followers. In 1740 an important step was taken when Wesley organized his first society and appointed lay preachers, who were communicants of the Church of England, to take charge of small groups of converts. The small meetings thus provided for caused the movement to spread rapidly. In 1744 the first conference of lay preachers was held. These remained members of the Established Church; it was not until 1784 that Wesley's organization became a new denomination, separate from the Church of England. Wesley was a prodigious worker, traveling long distances and preaching three or four times a day. At the same time he produced a large volume of religious literature. In 1750 he was married to Mrs. Vazeille, a widow with four children, but incompatibility soon led to a separation. At the time of his death Wesley's followers numbered 120,000.

A man of much charm of personality, kindly wit and humor, Wesley was admired even by those who opposed his doctrines. He retained his sprightliness and interest in all about him to the last. See METHODISTS.

Charles Wesley (1707–1788), a noted English evangelist, brother of John Wesley, aided his brother in founding the Methodist Church. He was born in Epworth, England, and was educated at Westminster School and at Christ Church, Oxford. In 1735 he went with his brother John to America and preached in the Georgia colony. His preaching was not successful, owing to his extreme views; and in 1738, influenced by his brother, he modified his doctrines and methods and became an itinerant preacher. He then began to attract large audiences. His chief service to the Methodist movement, however, was as a writer of hymns. He produced about 6,000, some of which remain favorites in the denomination.

WESLEYAN METHODISTS, an offshoot of the original Methodist Church, which preserves the form of church government originated by John Wesley. It is chiefly represented in the British Isles. The other important branch of the denomination, distributed chiefly in America, early adopted the Episcopal form of church organization and became known as the Methodist Episcopal Church. The history of Methodism will be found in the article METHODISTS. See also WESLEY.

WEST, BENJAMIN (1738–1820), an American painter, who made his way up from humble beginnings to a place of highest distinction in the world of his day. Painting and drawing he taught himself, making his colors of leaves and berries and his brushes of hair from his cat's tail. At the age of eighteen he established himself as a portrait painter in Philadelphia. In 1760 he went to Rome, where his *Cimon and Iphigenia* and *Angelica and Medora* received favorable comment. Three years later he went to England; and so cordial was his reception that he decided to make London his home. For King George III, his patron for more than thirty years, he executed a series of historical and religious paintings for Windsor Castle. On the death of Sir Joshua Reynolds, in 1792, he became president of the Royal Academy. The best of his historical paintings are *The Death of General Wolfe, Penn's Treaty with the Indians, The Battle of La Hogue* and *The Black Prince at Poitiers.* Among his re-

ligious pieces, the most notable is *Christ Healing the Sick*. Though not a great genius, West was a talented and painstaking painter, and is given credit for improvements he made in the manner of treating historical subjects.

WEST CHES'TER, PA., the county seat of Chester County, twenty miles west of Philadelphia, on the Pennsylvania and the Philadelphia, Baltimore & Wilmington railroads. It is surrounded by an agricultural region, and large cream separator works and extensive nurseries are the most notable industries. The city is the seat of the West Chester State Normal School, one of the largest normal schools in the country, and of Darlington Seminary for young ladies and Saint Anthony's Boys' College. The Battle of the Brandywine was fought within four miles of West Chester, and the battlefields of Chadd's Ford and Valley Forge are within driving distance. The Old Turk's Head Hotel dates from pre-Revolutionary days. Population, 1910, 11,767; in 1917, 13,403 (Federal estimate).

WESTERN AUSTRA'LIA, a state of the Australian Commonwealth, occupying all of that portion of the continent west of the 129th meridian, east longitude. Its greatest extent from north to south is 1,480 miles, and from east to west, 1,000 miles. The area is estimated at 975,920 square miles, making it the largest of the Australian states. In this vast region there are about three inhabitants to the square mile, as the population in 1917 (official estimate) was only 308,530. No other state of the Commonwealth is so sparsely populated.

The interior is a low plateau, varying in altitude from 700 to 1,000 feet and occasionally rising to greater height. It is mostly sterile, with little or no vegetation. Most of the eastern part of this division belongs to the great Victorian Desert. The western coast line is bordered by highlands or mountains, which are from 50 to 100 miles from the coast. These mountains also extend into the northern or Kimberley division. They are low, and their highest summits do not exceed 3,580 feet. The productive regions of the colony are in the west and southwest. Here there is sufficient rainfall to sustain vegetation, and extensive forests of eucalyptus, sandalwood and other Australian trees occur.

The lands are also well suited to grazing and agriculture, and wheat, barley, corn, oats, potatoes and hay are raised in paying quantities. Apples, peaches, oranges, lemons, grapes and other fruits are also cultivated. Considerable live stock is raised and wool growing is an important branch of agricultural industry. Other resources of the state are timber, and mineral wealth, consisting largely of gold.

The government is similar to that of other Australian states. The governor is appointed by the British sovereign and the legislature consists of a legislative council of thirty members and an assembly of fifty members. The members of the council are chosen for six years, and of the assembly, for three years. Women vote on equal terms with men. Perth is the capital. Population in 1915, 319,859. See AUSTRALIA.

WESTERN RESERVE. In 1786, when Connecticut ceded to the United States government the western lands covered by its original charter of 1662, it retained a strip of land extending westward from the Pennsylvania boundary 120 miles, and called it the Western Reserve. Most of this tract was sold in 1795 and 1796 to the Connecticut Land Company, and the sum paid ($1,200,000) was used for Connecticut public schools. The new company surveyed the land, and settlers began to take homesteads and to develop it. Later the district became a part of the state of Ohio. The name of the reservation disappeared from geography, but survives in a university at Cleveland, which is situated in the district (see below).

WESTERN RESERVE UNIVERSITY, a nonsectarian institution of higher learning, founded in 1826. It is located in Cleveland, Ohio, where it occupies a beautiful parklike campus covering thirty-six acres. The following departments are maintained: Adelbert College; Men's College; the College for Women; the Library School; the School of Applied Social Sciences; schools of dentistry and pharmacy; the Department of Graduate Instruction; graduate schools of law and medicine; the School of Education, and the summer session. The library contains 134,000 bound volumes. Including the summer school enrollment, the student body numbers about 4,000. There are about 350 members on the faculty.

WEST'FIELD, MASS., a town in Hampden County surrounded by the picturesque Berkshire Hills, is nine miles west of Springfield, on the Westfield River and on the Boston &

Albany and the New York, New Haven & Hartford railroads. It is especially noted for its manufacture of whips, in which industry it is the leading city of the United States; heating apparatus, bicycles, motorcycles and cigars are also manufactured. A state normal school is located here, and the town has a Federal building, a hospital and a public library. Westfield was settled in 1642, and was known by the Indian name of Woronoco until its incorporation in 1669. Population, 1910, 16,044; in 1917, 18,769 (Federal estimate).

WEST INDIES, *in'diz,* or **ANTILLES,** *an til' leez,* an archipelago lying between North America and South America, and between the Gulf of Mexico and Caribbean Sea on the west and the Atlantic on the east. The islands cover a total area of about 92,000 square miles, while their surface area comprises only about 300 square miles. They are believed to be the summits of a subterranean mountain chain. Most of them are high above sea level. The climate is tropical. Cuba, the largest island of the group, is independent; Santo Domingo and Haiti, both on the same island, are self-governed states under the financial supervision of the United States. The other islands are colonial possessions, distributed among the several governments as follows.

Great Britain: Bahamas, Jamaica, Caymans, Virgin Gorda, Tortola, Anegada, Sombrero, Anguilla, Barbuda, Saint Christopher (Saint Kitts), Antigua, Nevis and Redonda, Montserrat, Dominica, Saint Lucia, Saint Vincent, Barbados, Grenada and the Grenadines, Tobago, Trinidad.

United States: Porto Rico, Saint Thomas, Saint John, Santa Cruz (Saint Croix), the last three purchased in 1917 from Denmark and now called the Virgin Islands.

France: Martinique: Guadeloupe, Désirade, Saint Martin (in part), Marie Galance, Saint Bartholomew, Les Saintes.

Netherlands: Saint Martin (in part), Saint Eustatius, Saba, Curaçao, Aruba, Buen Ayre.

Venezuela: Margarita, Tortuga, Hermanos.

Independent: Cuba and Isle of Pines, Haiti. The large islands and different groups are described under their respective titles.

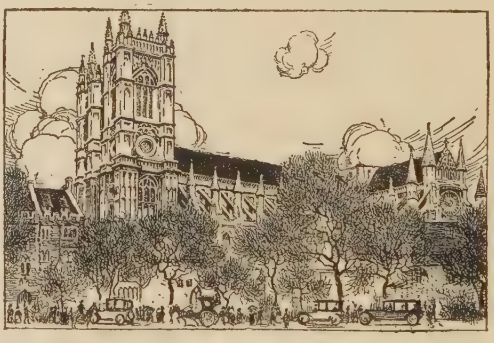
Related Articles. Consult the following titles for additional information:

Bahama Islands
Barbados
Cuba
Dominica
Guadeloupe
Haiti
Jamaica
Leeward Islands
Martinique
Porto Rico
Saint Christopher
Santo Domingo
Travels in Distant Lands
Trinidad
Virgin Islands
Windward Islands

WEST INDIES, DANISH. See VIRGIN ISLANDS OF THE UNITED STATES.

WEST'INGHOUSE, GEORGE (1846–1914), an American inventor and engineer, the inventor of the air brake. He was born in Schoharie County, N. Y., and was educated in the public schools of Schenectady. He spent much time in his father's machine shop and invented, when but fifteen years of age, a rotary engine. During 1863 and 1864 he served in the Union army, and later he studied in Union College. His inventions include a device for replacing railroad cars on the track; the air brake, which he invented in 1868 and subsequently improved, and a number of signaling devices. Alternating current machinery was introduced in America largely through his efforts. He built the great generators at Niagara Falls and those for the elevated railway and the rapid transit system in New York, and he established in Europe and in the United States large works for the manufacture of air brakes and other machines. See AIR BRAKE.

WESTMINSTER ABBEY, a famous church in London, called "Abbey" because up to the time of Henry VIII it was a Benedictine monastery, presided over by an abbot. It is situated near the Thames, adjoining the Houses of Parliament. In 1065 a church was built on the site, in the Norman style, by



WESTMINSTER ABBEY

Edward the Confessor, but the main building, as it now stands, was begun in 1220 by Henry III and was practically completed by Edward I. Various additions were made down to the time of Henry VII, who built the chapel which bears his name. The upper parts of the two towers were designed by Sir Christopher Wren. The extreme length of the church is 423 feet, the roof is 102 feet high, and the towers are 225 feet. The coronation

of English kings takes place in the choir of Westminster Abbey, where the coronation stone brought by Edward I from Scotland, is placed beside the coronation chairs of the English sovereigns.

Burial in the Abbey is one of the greatest honors the nation can bestow, and not only sovereigns but some of the most celebrated men of science, soldiers, statesmen and men of letters are interred there. Some of the great men who have not been buried there are honored with tablets or portrait busts. In the *Poet's Corner* are monuments to most of England's great poets, from Chaucer to Robert Browning, and a memorial to Longfellow, the only American who is represented.

WESTMINSTER HALL, the hall of the old palace of Westminster, erected by Richard II on the foundations of a structure built by William Rufus. It is 290 feet long, sixty-eight feet wide and ninety feet high, and it has a fine porch, and a roof of carved timber which is considered the most notable of its kind. This building is closely associated with many stirring events in English History. Here Chancellor More, Lady Jane Grey, the Earl of Strafford, King Charles I and Warren Hastings were brought to trial. The hall was the center of the highest English courts of law until these were removed to the new buildings recently erected for their accommodation. It escaped the fire of 1834, and to-day serves as a vestibule to the Houses of Parliament.

WEST ORANGE, N. J. See ORANGE.

WESTPHALIA, *west fa' li ah,* a small province of Prussia, mountainous as to its surface, rich in iron, coal, zinc and copper. Its annual output of coal before the World War was over 53,075,000 tons, and of iron, over 1,563,700 tons. There is also a large stone and salt industry. Plants for the manufacture of metal wares and machinery abound. Westphalia also manufactures quantities of linen, woolen and cotton goods. About forty per cent of the area is under cultivation, producing crops of rye, oats, flax, potatoes and wheat. Münster is the principle city of the province.

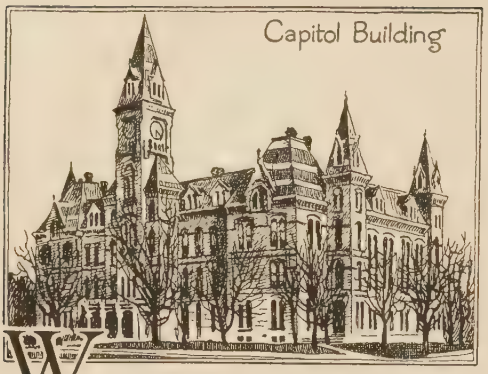
In the transition of Germany from an empire to a republican form of government, the province of Westphalia will doubtless remain an integral part of the old kingdom of Prussia, but its exact relation may not for some time be determined.

WESTPHALIA, PEACE OF, the treaty which closed the Thirty Years' War. Many states had been involved in this contest and two separate conventions were held to decide upon terms of peace. The representatives of the Empire, France and Spain and the Catholic electors and princes of the Empire met at Münster, and the representatives of Sweden, the Empire and the German Protestants at Osnabrück. Each of these conventions signed a treaty in 1648 and in October of that year the general treaty was signed at Westphalia, by the representatives of all the powers.

One of the important provisions of the treaty was the extension to the Calvinists of the religious liberty which had by the Peace of Augsburg been allowed only to the Lutherans. It was provided, also, that all territory which, in the Palatinate, Württemberg and Baden in 1618 and in the other states in 1624, had been held by Catholics, was to remain Catholic, and that all which at that time had been held by Protestants was to remain Protestant. A prince might make his religion compulsory with his subjects, but the latter had the right to emigrate if dissatisfied. The Upper Palatinate was added to the duchy of Bavaria; the Lower Palatinate was given to the son of the Elector Palatine, and Western Pomerania was ceded to Sweden. Brandenburg received certain cessions of territory to make up for the loss of Pomerania; France was given Alsace, with Metz, Toul and Verdun; Spain recognized the independence of the United Provinces of the Netherlands, and Austria recognized the independence of Switzerland. See THIRTY YEARS' WAR.

WEST POINT', N. Y., a village in Orange County, on the west bank of the Hudson, fifty-five miles north of New York City, at the opening of the Highlands. The village is beautifully situated on an elevated plateau and is chiefly noted as the seat of the United States Military Academy, which occupies a site covering 2,300 acres (see MILITARY ACADEMY, UNITED STATES).

In the early history of the country West Point was of considerable strategic importance, and during the Revolution it was fortified under the direction of the Polish engineer Kosciusko. It was given into the command of Benedict Arnold (see ARNOLD, BENEDICT), who treacherously attempted to surrender it to the British. It was selected as the site of the academy by Congress in 1802.



WEST VIRGINIA, a South Atlantic state of the American Union, lying west of Virginia, of which it was originally a part. It is irregularly oval in shape, with projections on the north and northeast. These extensions gave rise to its popular name, the *Panhandle State*. West Virginia is one of the foremost mining states, ranking next to Pennsylvania in value of mineral output.

Location and Size. The state is the only one of the South Atlantic group which has no seacoast. Its northern boundary adjoins the frontiers of Ohio, Pennsylvania and Maryland, and its curving southern boundary follows the Kentucky and Virginia borders. Ohio and Kentucky are on the west. With an area of 24,170 square miles, West Virginia is the fortieth state in size, being about 6,800 square miles smaller than South Carolinia, the state next larger in area. It is almost exactly half the size of Louisiana, and about twice as large as Maryland, the forty-first state.

People and Cities. West Virginia has a remarkably high percentage of native-born inhabitants, the proportion of foreign born being less than five per cent. The total population in 1910 was 1,221,119, making the state twenty-eighth in rank. The average density per square mile was 50.8. On July 1, 1918, the population was 1,439,165, according to Federal estimates. There are more than 64,000 of negro blood, and of the foreign groups the most prominent are Italians, Austrians, Germans, Hungarians, Russians, English, Irish and Scotch.

The Methodists are the largest religious sect. Others of importance include the Baptists, Roman Catholics, Presbyterians, Disciples of Christ and Lutherans.

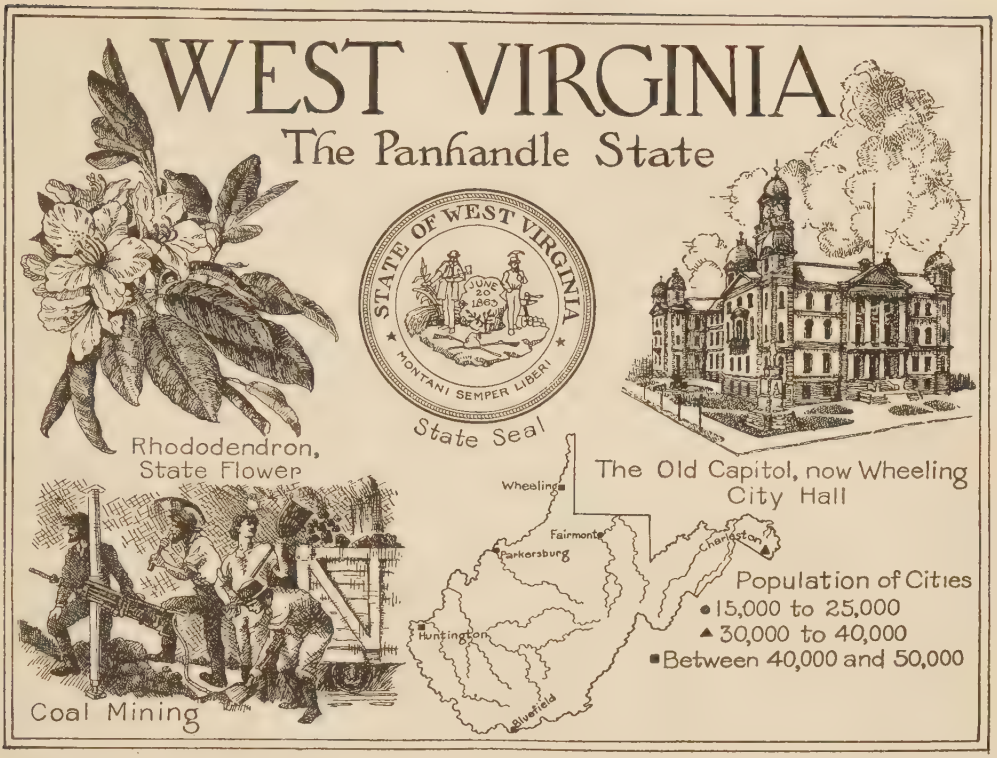
According to Federal estimates for 1917 there were in the state that year ten cities with populations exceeding 10,000. The first five, in order of size, with 1917 estimates, are Huntington (47,686), Wheeling, the capital (43,657), Charleston (31,060), Parkersburg (21,059), and Bluefield (16,123).

Surface and Drainage. The surface as a whole is very uneven and in the eastern portion it is mountainous. The mountain region occupies more than one-third of the state, and the ranges extend in a northeast-southwest direction. Between the mountain ranges on the eastern and western sides are broad valleys, narrowing into ravines as they approach the hill region. The ridges in the eastern part are cut by numerous transverse valleys, and in the southern part these valleys are so numerous as to cut the mountain ranges into broad domes with spurs running in various directions, leaving but few definite ridges. The average elevation of the state, 1,500 feet, is the highest average of any state east of the Mississippi River. The highest point is Spruce Knob, in Pendleton County, which has an elevation of 4,860 feet, and the lowest point is Harper's Ferry, with an elevation of 260 feet. Some of the other prominent peaks are Bald Knob, 4,800 feet, and High Knob, 4,170 feet. West of the mountains there is a belt of broad, flat hills, ranging from 1,000 to 2,000 feet in elevation. These hills are followed by a more gently rolling country, sloping toward the Ohio River.

The Ohio River furnishes steam navigation along the whole western boundary and receives all the principal streams of the state, except the Potomac and its affluents. The largest rivers flowing into the Ohio are the Guyandotte, the Kanawha, the Little Kanawha, the Big Sandy and the Monongahela. The chief streams flowing into the Potomac are the North and South branches.

Climate. The climate is remarkably equable, with no extremes of heat or cold. The mean annual temperature at Morgantown is 54°. The average rainfall in the highest elevation is thirty-five inches, and in the lowest fifty-five inches.

Mineral Resources. Coal, natural gas and petroleum are the most valuable mineral products of this richly-endowed commonwealth. Possessing 17,280 square miles of coal area, West Virginia surpasses Pennsylvania in extent of deposits, though the latter state has a larger annual yield. The production in West Virginia has been steadily increasing for many years, and now approxi-



mates 90,000,000 tons annually, wholly of bituminous coal.

In the output of natural gas the state ranks first in the Union, with an annual yield valued at over $45,000,000. The richest fields are in Lewis, Harrison and Ritchie counties, but there are wells in at least a score of counties. West Virginia is the sixth state in yield of petroleum, the yearly production of which is about 9,000,000 barrels. Other products found in paying quantities include clays, glass sand, marble, sandstone, limestone and salt. The total annual value of all mineral products is about $135,000,000.

Agriculture. Considering its mountainous surface West Virginia ranks well as an agricultural state; about one-third of the whole land area is improved. The Ohio and the northeastern valleys are especially fertile. Corn is grown generally, and leads all other crops in acreage, production and value. The annual harvest is about 25,000,000 bushels. Other important crops are wheat, hay, oats, potatoes, buckwheat and rye. Sorghum cane and sugar beets also receive considerable attention, and fruits thrive in various sections, especially in the panhandle regions. Apples, including the prized Grimes' Golden variety, are the most important orchard crop, and peaches are second. Market gardening, stock raising and dairying are all profitable lines of farm activity.

Manufacturing. West Virginia has many natural advantages conducive to the development of manufacturing, such as an abundance of fuel, water power and good transportation facilities. It ranks tenth among the states in the manufacture of lumber and lumber products, its most important manufacturing industry. Wheeling, the principal manufacturing city, is the center of the iron and steel interests, representing the second largest industry.

The state is first in the production of lampblack, one of the first ten in the production of tanned leather articles, second in the output of galvanized iron, third in that of coke, and second in that of tin plate and terneplate. At Wheeling and other cities there are extensive glass factories, and at Charleston there is one of the largest ax factories in the world. Oil refining, pottery making and the manufacture of tobacco products are also carried on.

Charities and Corrections. The charitable and correctional institutions include the

Items of Interest on West Virginia

One of the provisions of the state constitution makes it illegal for the commonwealth to contract debts. In July, 1916, there was a surplus in the treasury of more than $2,323,000.

The important railway systems entering the state include the Pennsylvania, the Baltimore & Ohio, the Chesapeake & Ohio, the Norfolk & Western and the West Virginian, Central & Pittsburgh.

The Ohio and its tributaries provide some of the cheapest means of transporting coal in the world.

West Virginia assumed its share of the old state debt when it separated from Virginia, but the amount for which the state was liable was not definitely decided upon until 1915, when the United States Supreme Court placed the state's liability at $12,393,929, with interest reckoned at $8,178,000.

There are no lakes in the state, and the water area, 148 square miles, is smaller than the water surface of most of the states.

The large tonnage of coal, timber, and ores makes transportation of freight a profitable business, most of which is handled by the railroads, though large sums of money have been spent by the Federal government and by the state to improve river navigation.

All children between the ages of six and twenty-one are entitled to free education in the public schools, and all children between the ages of eight and fourteen are required to attend school at least twenty weeks each year.

Questions on West Virginia

What is the general shape of West Virginia?

What is its area? Population?

What is the character of the surface?

What rivers drain the state?

How does West Virginia rank in the production of coal? Petroleum? Natural Gas? Coke?

What is Blennerhassett and why is it famous?

Western State Hospital, the Spencer State Hospital, the Huntington State Hospital, the State Tuberculosis Sanatorium, the Welch State Hospital, No. 1, McKendree Hospital, No. 2, the Fairmont Hospital, No. 3, the West Virginia Industrial School for Boys, the West Virginia Industrial Home for Girls, the West Virginia School for the Deaf and Blind, the West Virginia Colored Orphans' Home, and the West Virginia Children's Home.

Transportation. The state secures water communication through the Ohio, the Monongahela, and the Kanawha, which are navigable for large boats. Lumber is floated down the Little Kanawha, Big Sandy and Guyandotte, as well as down the Ohio, which is used extensively to transport coal. Several trunk lines of railway traverse the state from east to west, one in the northern, another in the central and two in the southern section. Lines also extend north and south, connecting these in several places, and there are numerous cross-lines and spurs, so that the northern and central parts of the state are well supplied with railway facilities. There are over 3,900 miles of railroad in the state.

Government. The legislature consists of a senate and a house of delegates, the former having thirty members, and the latter, eighty-six. One-half of the senators are elected every two years, for a four-year term, and the delegates are elected for two years. The legislature meets biennially, and the session is limited to forty-five days. The executive department consists of a governor, a secretary of state, a superintendent of free schools, a treasurer and an attorney-general, each elected for four years. The courts consist of one supreme court of appeals, twenty-two circuit courts and thirty-eight courts of limited jurisdiction, together with courts of county commissioners, justices of the peace and city courts.

Education. Separate schools are maintained for white and colored pupils. The system of public instruction is in charge of a superintendent of free schools, and school attendance is compulsory for children between the ages of eight and fourteen. High school education is under the direction of a special supervisor. The higher institutions of learning include the University of West Virginia, at Morgantown; the normal schools at Athens, Fairmont, Glenville, Huntington,

Shepherdstown and West Liberty; Bethany College; West Virginia Wesleyan College; Morris Harvey College; the West Virginia Colored Institute and Bluefield Colored Institute.

History. The state of West Virginia was, until 1863, a part of the state of Virginia. (For early history, see VIRGINIA, subhead *History.*) At the outbreak of the Civil War, many of the counties in the western part of that state had Union sympathies, while the remainder wished to secede and join the Confederacy. Therefore, in June, 1861, representatives of forty counties declared independence of the state of Virginia, established a provisional government under Francis H. Pierpont, as governor, and a legislature elected representatives to Congress and adopted a constitution in April, 1862. Meantime, a "reorganized" provisional government of Virginia had given its consent to the formation of the state, and West Virginia was formally admitted June 20, 1863. It was the scene of some of the earliest fighting in the Civil War, and furnished far more than its quota to the Federal armies. After the war there was rapid development of the resources of the state and a great increase in population. It was Democratic in politics from 1872 to 1892, but it has been generally Republican since that time. Statewide prohibition went into effect July 1, 1914.

Related Articles. Consult the following titles for additional information:

CITIES

Bluefield, Charleston, Clarksburg, Fairmont, Harper's Ferry, Huntington, Martinsburg, Morgantown, Parkersburg, Wheeling

MOUNTAINS AND RIVERS

Alleghany, Blue Ridge, Cumberland, Kanawha, Monongahela, Ohio, Potomac

WEST VIRGINIA UNIVERSITY, a co-educational state university, established at Morgantown in 1868, by the consolidation of the West Virginia Agricultural College, Woodburn Seminary and Monongahela Academy. It includes colleges of arts and sciences, engineering and mechanic arts, agriculture, medicine and law, schools of music, military science and tactics, and commerce, and preparatory schools at Keyser, Montgomery and Morgantown. There are about 125 instructors and about 1,200 students, including those in special departments and in the summer school.

WEYLER, *way'ler,* NICOLAU VALERIANO, Marquis of Teneriffe (1838–), a Spanish general and administrator, born at Palma, Majorca. He received a military education in Spain, and was a military attaché of the Spanish legation in the United States at the time of the Civil War. He fought in Cuba under Balmaceda, from 1868 to 1878, and later in Spain against the Carlists. Afterwards he was successively governor of the Canary and the Balearic islands, and in 1889 he became captain-general of the Philippines. After later service as provincial governor of Catalonia, Spain, he became, in 1896, Spanish governor of Cuba. His administration there was marked by such harshness and cruelty that the United States protested, and in 1897 he was recalled. After the Spanish-American War he was for a time captain-general of Madrid.

WEYMAN, *wi'man,* or *way'man,* STANLEY JOHN (1855–), an English novelist, born at Ludlow, Shropshire, and educated at Oxford. He was admitted to the bar in 1881 and practiced for eight years. His first historical romance, *The House of the Wolf,* is a story of the French occupation of Quebec. *A Gentleman of France* established his reputation in the field of historical romance; it has been translated into many languages. Among his other novels which have brought him wide popularity are *Under the Red Robe, My Lady Rotha, The Red Cockade, The Man in Black, The Castle Inn* and *The Wild Geese.*

WHALE, a large marine animal, some species of which are the largest animals in existence. Though often classed as a fish, the whale bears only a superficial resemblance to the fishes. The tapering body terminating in a finlike tail and the fin-shaped paddle on

WHALE

each side of the body are the only points of similarity, while the dissimilarities are numerous and fundamental.

The whale, first of all, is a mammal, bearing its young alive, and suckling it in infancy. It has well-developed brain and lungs, and warm blood, which circulates through veins

and arteries. Its bones, joints and muscles are like those of the higher land mammals. The forelimbs contain the same bones as do those of other mammals. These are proportionately short, and, instead of toes, there is a paddle, about seven feet long, formed by a continuous skin; while in the rear part of the body are rudimentary bones which indicate the existence of hind legs in remote ancestors. The organ of locomotion is the fin-shaped tail, which is also used for purposes of defense. The whale is a timid creature and becomes combative only when attacked. When aroused it can capsize a large vessel with its tail, which is from five to six feet long and twenty to twenty-five feet broad, and destroy smaller craft by ramming it with its blunt nose.

Two distinguishing characteristics of whales are the proportionately large head, which is usually a third of the entire length of the body, and the thick layer of fat beneath the skin, which protects the animal from the cold. This fat, called blubber, is cut from the captured animal and reduced to oil. Before mineral oils came into general use, whale oil was burned in lamps in every part of the world.

The eyes of whales are small and there is usually only one nostril, frequently S-shaped, situated on top of the head. It is closed by a pluglike valve, opened only by pressure from inside. When the whale comes to the surface it expels the air from its lungs with great force through this nostril; and the hot, moisture-laden breath condensing in the cold air produces a column of vapor several yards high. The notion that a whale takes water into its mouth and blows it out through this hole is erroneous. The whale's mouth is large, but the throat is very small; however, a species known as the Greenland whale has a throat large enough to admit a man's body.

Whales usually are divided into two classes —the whalebone whales and those having teeth. The toothless whales are commercially the more important, and are hunted for both oil and whalebone, which latter is taken from the animal's mouth. The roof of the mouth is provided with vertical horny plates, called *baleen,* about 500 in number. These plates hang from the roof of the mouth in a fringe ten or twelve feet long. This equipment serves as a sieve for straining out the minute animals on which these whales feed. The surface waters of the ocean teem with animal life, and whales in feeding swim with open mouth at high speed near the surface, traveling in this way until hunger is satisfied. The manufacture of cheap substitutes for whalebone has greatly decreased the commercial importance of whalebone whales.

The toothed whales are the larger, attaining a length of ninety feet and a weight of seventy tons. The young when born are from ten to fourteen feet long. Of these the sperm whale is the most valuable. The blubber produces sperm oil, while the oil of the head yields spermaceti, used in making candles and cosmetics. Another valuable product of this whale is *ambergris,* found in the intestines and used in making perfumes.

Before the middle of the eighteenth century whaling was an important industry, but since the discovery of petroleum it has rapidly declined. Modern whaling operations are conducted with swift vessels, and the whales are killed by harpoons shot from guns. On every coast where whale fishing is conducted there are stations along the shore to which the carcasses are towed and cut up and prepared for market.

Related Articles. Consult the following titles for additional information, as well as the article Mammal:

Ambergris	Cetacea	Sperm Whale
Blubber	Spermaceti	Whalebone

WHALEBONE, *hwāle'bone,* or **BALEEN',** a term applied to the horny plates attached to the palate of the toothless whale. They are arranged in a double row on the upper jaw and hang down parallel into the cavity of the mouth. The length of the plates varies from a few inches to twelve feet, and in number there are about 200 on each side of the mouth. The color varies according to the species, some kinds being black, some yellowish-white and others gray, striped with black or black and white.

This whale has no teeth, and this fringe of bony plates serves as a sieve or strainer of the animal's food which it takes in through wide jaws while traveling at high speed. From its strength, lightness and flexibility, whalebone has become an important article of commerce, being used for many purposes, as in the manufacture of corsets, ribs for umbrellas, whips and surgical instruments, though in some of these uses it has been largely superseded by steel.

WHARTON, Edith (1862–), whose maiden name was Edith Newbold Jones,

is one of the most important of contemporary novelists. She was born in New York City, was privately educated, and in 1885 married Edward Wharton of Boston. She early achieved distinction as a short-story writer and in 1899 published her first novel, *The Greater Inclination,* a study in human motives. *The Touchstone,* her second novel, showed a distinct advance in the author's power of psychological analysis, a quality for which she is chiefly distinguished. With *The House of Mirth,* in 1906, she reached the height of her artistic achievement. Also notable are *The Valley of Decision, The Fruit of the Tree* and *Tales of Men and Ghosts.*

With the exception of *Ethan Frame* and one or two others, Mrs. Wharton's stories all are of the literary and artistic world and of the world of fashion, and her characters are the highly cultivated products of those environments. Important books not mentioned above are *The Reef, The Custom of the Country, Italian Villas and Their Gardens* and *Italian Backgrounds.* During the Great War she maintained a residence in Paris and contributed invaluable aid to war sufferers. As a result of this experience she wrote *Fighting France,* and edited *The Book of the Homeless,* a book prepared and sold for the benefit of the Belgian refugees.

WHEAT, one of the most valuable and widely-known cereal crops, has constituted the staple food of civilized nations for many centuries. It will grow readily in all climates, except the hottest parts of tropical regions and the extreme cold portions of the frigid zones. However, it is best adapted to the temperate regions, and within these regions the greater part of the world's crop is produced. It requires a rich clay soil or heavy loam, and clear, bright days while it is ripening.

Wheat is supposed to be a native of Western Asia, but it has been cultivated so many centuries that the place of its origin is not fully known. It was introduced into North America in the sixteenth century.

Varieties. In accordance with their method of growth wheats are divided into *bearded* wheat and *bald* wheat. The first has glumes attached to the seeds, while the second has none. In regard to the color of the kernel, the varieties are divided into *light-colored* and *dark-colored,* or *white* and *red* wheats. Classified according to the time of planting all wheats are grouped under *winter* wheat and *spring* wheat. In each of these classes we find hard and soft wheats. The winter wheat is planted in the fall and is harvested early the following summer. It is well suited to warm temperate climates that have mild winters. The spring wheat is planted early in spring and matures the same season. It is adapted to the short season of the cool temperate regions. It is usually a hard wheat and of better quality than any of the varieties of winter wheat.

Production. The United States is the leading wheat-producing country in the world, and the raising of this grain is carried on in Minnesota, North Dakota, South Dakota, Kansas, Oklahoma and some other states on an extensive scale. The wheat farms or ranches are large, some of them embracing more than 25,000 acres. These are divided into sections, each of which has its stables for teams, sheds for storing machinery, and other buildings, and each is under the direction of a foreman. In the spring-wheat region the land is plowed in the fall, and the wheat is planted as early in the spring as the condition of the ground will admit. In the winter-wheat section the ground is plowed as soon as possible after the crop has been harvested. The time of planting depends upon the location. In the warmest regions it is later than in the cool portions of the winter wheat belt.

The work of planting and harvesting is done by machinery. The land is prepared by plows, sometimes by gang plows, which on the largest farms are drawn by tractors. The seed is planted by drills, or sowing machines, and the grain is harvested by self-binding harvesters and thrashed by machines operated by steam engines of such capacity as to thrash from 1,200 to 1,500 bushels in a day (see THRASHING MACHINE).

The wheat is hauled directly from the thrasher to the local elevators or to cars for shipment. From the local elevators it is transported to the great wheat centers, such as Minneapolis, Duluth, Chicago and Buffalo, where it is stored in large elevators, some of which have a capacity of 6,000,000 bushels; there it is kept until needed for use.

The average production in the United States is about 880,000,000 bushels a year, though in 1915 the crop was 1,025,801,000 bushels. The leading states in the production of winter wheat are Kansas, Ohio, Oklahoma,

Indiana and Illinois. The leading spring wheat states are Minnesota, North Dakota, South Dakota, Washington and Montana.

Figures Represent Millions of Bushels

FOUR LEADERS

The figures represent the average of three years' crops.

Canada has become one of the great wheat countries of the world. In 1915 its production was 376,000,000 bushels, more than one-half of which was produced in Saskatchewan. Alberta, Manitoba and Ontario are the other important wheat producing provinces. Winnipeg and Port Arthur are the great wheat centers of the Dominion.

Figures Represent Millions of Bushels

COUNTRIES LEADING IN PRODUCTION

The figures represent the average of three years' crops.

At the outbreak of the World War about one-half of the world's wheat crop was produced in Europe, and Russia was next to the United States in quantity of production. Germany, France and Italy were also important wheat countries. But Europe has not for many years been able to produce all the wheat consumed by the people, and large quantities have been imported from the United States and other countries.

When the production of European countries was almost stopped by the war, the

Outline on Wheat

I. General Description
  (a) Plant as a whole
  (b) Stalk
  (c) Leaves
  (d) Fruit
II. History
  (a) Where first cultivated
  (b) Early cultivation in general
  (c) Introduction into Europe and the United States
III. Species
  (a) Beardless
  (b) Polish
  (c) Spelt
IV. Processes of Production
  (a) Planting
  (b) Harvesting
  (c) Threshing
  (d) Milling
V. Uses
  (a) Food for Human Beings
    (1) Flour
    (2) Bran
    (3) Macaroni
    (4) Cereals
  (b) Other Products
    (1) Feed for animals
    (2) Straw
    (3) Straw-board
    (4) Paper
VI. Markets

Questions on Wheat

What is the average yearly production of wheat in the United States?

What are the other leading wheat producing countries in the world?

What proportion of the world's crop does the United States produce?

What machines are used in preparing the soil for wheat?

Who invented the harvester?

With what tool did our forefathers cut their grain?

Name the different varieties of bread that you know.

Which do you consider the best? Why?

Where are the great wheat regions of Canada?

How long has wheat been known?

Of what region is wheat probably a native plant?

WHEAT

1, Harvesting.
2, Threshing.
3, Steel Elevator.
4, Interior of Flour Mill.
5, Wheat Plants.
6, Products.

demand upon the United States for wheat exceeded its supply for exportation. The Food Administration restricted the sale of wheat flour in 1918 and ordered wheatless days in hotels, restaurants and homes. To encourage an increased production of wheat, the government guaranteed the farmers a price of $2.26 a bushel for the years 1918 and 1919. Canada, Argentina and other countries were also drawn upon for the wheat they could spare for export. White wheat bread contains more nourishment per pound than any other article of food, with the exception of beans, and the scarcity of wheat caused by the war gave every one a slight idea of what a calamity a failure of the wheat crop might bring upon the race.

Uses. The greatest part of the wheat crop is manufactured into flour (which see). By-products of this manufacture include *bran, shorts* and *middlings.* Middlings are used extensively in the manufacture of breakfast foods, and bran and shorts are used for feed for stock. Large quantities of starch are also made from wheat. The straw is used for fodder, for bedding in stables, and in the manufacture of straw board and the cheaper grades of wrapping paper.

Wheat Insects. Among the enemies of wheat, those most dreaded are the chinch bug, the Hessian fly and the wheat midge, a small, yellowish insect, with a dark back, related to the Hessian fly, but differing in habits. The wheat midge, which is now common in the Mississippi Valley, probably came from Europe and has occasioned a great deal of damage to wheat, especially in warm and moist seasons. The damage is done by the little orange-yellow larvae, which destroy the embryos of the grain and prevent the heads from filling. As the larvae can live for several months without either moisture or food, they are carried about in the wheat heads, and so the species is distributed. The chinch bug and Hessian fly are described under their titles.

WHEATSTONE, Charles, Sir (1802–1875), an English scientist and inventor. Early in life he began the business of making musical instruments, and in his study of the scientific principle involving their construction he made important discoveries in physics. In 1834 he was appointed professor of experimental physics in King's College, London, and there he made important experiments in electricity and, in collaboration with an investigator named Cooke, devised an electric telegraph. From this apparatus developed the system of electric telegraphs used in England until 1870. Wheatstone was also the inventor of several other electric appliances, one of which enabled a system of clocks to be regulated from a central clock, by means of electro-magnets.

WHEEL, an instrument of torture, employed by the Greeks and Romans and later in Western Europe. "Breaking on the wheel" was instituted in France in 1534 and was abolished in 1789. Assassins, highwaymen, incendiaries and pillagers of churches were of the classes so punished. There were several modes of wheel torture. Sometimes the victim's bones were broken, and his body was then bent around a wheel, bound and left until death ensued, perhaps in twenty-four hours. To terminate sooner the victim's sufferings the executioner sometimes dealt him two or three heavy blows, called *coups de grace* (mercy strokes), on the chest or stomach. In Germany the wheel was occasionally used till the nineteenth century.

WHEEL AND AX'LE, a continuous lever of the first class (see Lever), consisting of a wheel and axle, fastened to the same axis. The radius of the wheel is the power arm, and the radius of the axle, the weight arm, of the lever. The law of equilibrium is that the power multiplied by the radius of the wheel is equal to the weight multiplied by the radius of the axle. In the figure, *A* represents the circumference of the wheel, *C* is the circumference of the axle, *R* the radius of the wheel, and *r* the radius of the axle. If the wheel has a diameter of three feet, and the axle has a radius of one foot, a power of one pound will balance a weight of three pounds. In making the computations, the same results are obtained, whether the radius of the wheel is compared with the radius of the axle, or the diameter of the wheel with the diameter of the axle. The most common use of the wheel and axle is in the windlass, for raising water. Here the crank often takes the place of the wheel, but the device operates on the same principle.

Combinations of the wheel and axle in which toothed wheels mesh into one another and are driven by a crank or an endless band, occur in machinery where great power is required. Derricks and the shears used for cutting iron bars and plates afford good illustrations of these combinations.

WHEELER, Benjamin Ide (1854–), an American educator, born at Randolph, Mass. He was educated at Colby Academy and Brown University and spent four years of study in the universities of Leipzig, Heidelberg, Jena and Berlin. He taught in the Providence High School, Brown University and Harvard and in 1886 became a professor in Cornell University, holding, successively, the chairs of comparative philology and Greek.

BENJAMIN IDE WHEELER

From 1899 to 1919 he was president of the University of California. His written works include *Analogy and the Scope of its Application in Language, Introduction to the Study of the History of Language* and *Principles of Language Growth.*

WHEELER, Joseph (1836–1906), an American soldier, born at Augusta, Ga. He was educated at the West Point Military academy, was appointed lieutenant of cavalry and served in New Mexico. When the Civil War broke out he joined the Confederate army. He was rapidly promoted, attaining the rank of lieutenant-general. He took part in the Battle of Shiloh, rendered distinguished service at Chickamauga and impeded Sherman on his march through Georgia and South Carolina. After the war he settled in Alabama, and in 1880 he was sent to Congress. He represented his district until 1898, when he reëntered the United States army as major-general of volunteers to the great delight of all America, with command of the cavalry in the Army of Santiago. He rendered valiant service in the battles of Las Guasimas and San Juan Hill, and he was senior member of the commission which arranged for the surrender of Santiago. Later he served in the Philippines, until he was retired in 1900.

JOSEPH WHEELER

WHEELER, William Almon (1819–1887), an American statesman, born at Malone, Franklin County, N. Y. He studied for a time at the University of Vermont, studied law in his native town and was admitted to the bar. Later he engaged in banking. He was a member of the state legislature for two terms, and in 1860 he was sent to Congress, where he served continuously until 1877. He was nominated for the Vice-Presidency by the Republican party in 1876 and was elected with President Hayes. He returned to Malone at the expiration of his term in 1881. Wheeler rendered invaluable service to his country during reconstruction days by his conciliatory attitude as chairman of the committee on Southern affairs.

WHEEL'ING, W. Va., the second city of the state, county seat of Ohio County, sixty-three miles southwest of Pittsburgh, Pa., on the Ohio River and on the Pennsylvania, the Baltimore & Ohio and the Wheeling & Lake Erie railroads. One ward of the city is built on Zane's Island in the river, the island being connected with the main part of the city by bridges, one of them a suspension bridge more than 1,000 feet long. There is water commerce in iron ore, produce, fruit, cattle and poultry. The main manufactures are steel, glass and tobacco products. The city has one of the largest electric power plants in the world. A unique feature is the Market-Auditorium, which combines an up-to-date market and a convention hall. There are a Federal building, a courthouse, a public library and four hospitals. Educational institutions include the Linsly Institute for boys and the Mount de Chantel School for girls. A normal school and Bethany College are not far distant.

Wheeling was settled by Ebenezer Zane in 1770, and was the first town on the Ohio River. It was incorporated in 1806, and was chartered as a city in 1836. Fort Henry was built here in 1774. The people of Virginia who were opposed to secession met here in 1861 at the Wheeling Convention and established "the restored government of Virginia." The Constitutional Convention of

West Virginia also met in Wheeling, and the city was the state capital from 1863 to 1870 and from 1875 to 1885. The commission form of government was adopted in 1917. Population, 1910, 41,641; in 1917, 43,657 (Federal estimate).

WHIG, in English history, the name formerly applied to the political party advocating changes in the constitution in the direction of democracy. The term is of Scottish origin, but was early brought to England, where it was used as the name of the political party opposed to the *Tories,* or government party. The term *Liberals* is now generally applied to the representatives of the party formerly known as *Whigs.*

The Whig party in the United States opposed the Democratic party from about 1835 to 1856, when the Northern wing of the Whigs was merged in the new Republican party. See POLITICAL PARTIES IN THE UNITED STATES.

WHIP'POORWILL, a North American bird of the goatsucker family. The name is an imitation of the bird's peculiar call of three shrill notes ending in a rising inflection.

WHIP-POOR-WILL

This weird cry is repeated many times in close succession. The whippoorwill makes its home in the midst of thick woods, rarely visiting the haunts of men. It is active at night, feeding on night insects, which it catches on the wing. During the day it sits lengthwise on a limb, where, owing to its mottled plumage, it is not easily seen.

WHIRLPOOL, *whurl'pool,* a body of turbulent water with a spiral movement due to the shape of its channel, to meeting currents or to the conflict of winds and tides. Small whirlpools occur in rivers and are caused either by the forcing of the current into a circular core in the channel or by an opening in the bank of the stream which draws the water down to a lower level. Sometimes the position of rocks and the direction of currents in the sea cause large and dangerous whirlpools. The most noted of these is the Maelstrom, off the coast of Norway, and the Charybdis, near Sicily. The most celebrated river whirlpool is that of the Niagara River, below the falls.

WHIRL'WIND, a sudden and swift spiral movement of the free air of the atmosphere, either the small eddy of the city street which whirls leaves and dust and other light objects about in it, or the more extensive whirls of the deserts and plains. Very powerful whirlwinds are called cyclones or tornadoes. Whirlwinds are caused by the meeting of currents of air, or the collision of currents moving in opposite directions, and except in the case of the small eddies, they all take the same direction—counter clockwise in the northern hemisphere, and clockwise in the southern hemisphere, being governed by the vast planetary movements of the atmosphere. See CYCLONE; TORNADO.

WHIS'KY, a spirituous liquor, distilled chiefly from the fermented mash of cereal grains. There are two main varieties of whisky, called malt whisky, in which malt predominates, and grain whisky, in which unmalted grains predominate. The latter was formerly manufactured almost exclusively in the United States, rye and Indian corn being chiefly employed.

In the making of whisky several processes are necessary to convert the starch of the grain into sugar and the sugar into alcohol. The grain is ground, and the starch is cooked in a steamer for several hours to render it soluble. It is then added to the malt, and the mixture is kept at a temperature of 145° F. for about four hours. This saccharine infusion, called *wort,* is then drawn off, yeast is added, and the wort is allowed to stand from three to nine days to ferment. The liquid thus prepared for distillation is technically known as *mash.* It is placed in a metal container called a *still,* subjected to high temperature, and the vapors pass off through a spiral tube known as a *worm* and are condensed. Since September, 1917, the manufacture of whisky, except for medicinal purposes, has been prohibited in the United States.

Related Articles. Consult the following titles for additional information:
Distillation Prohibition
Malt

WHISKY INSURREC'TION, the name given to a revolt against the Federal govern-

ment in Western Pennsylvania in 1794. It was the result of the excise law passed by Congress in 1791, imposing a tax on whisky. This tax was a peculiarly heavy burden to the people of Western Pennsylvania, most of whom were dependent for support largely upon the manufacture of whisky. They successfully resisted the attempts of the government to collect the tax and haughtily rejected the offer of amnesty in return for a promise of submission. Finally, in October, 1794, Washington sent 15,000 militia to the scene of the disturbance, and the insurrectionists promptly subsided. Two of the leaders were found guilty of treason, but President Washington pardoned them.

WHISKY RING, a term given in American history to a combination of distillers and Federal revenue collectors, who in Grant's administration conspired to defraud the government of the excise tax on whisky. This "ring" began operations in Saint Louis, where the revenue officers, having knowledge of technical violations of the law, blackmailed the distillers, under threats of prosecution. The decline in the revenue receipts was immediately noticeable, but all efforts at finding the conspirators failed, on account of the presence of their friends in the Treasury Department at Washington. It was only after the most thorough investigation by Benjamin H. Bristow, Secretary of the Treasury, that evidence sufficient to convict was found. The disclosures implicated the chief clerk of the Treasury Department and O. E. Babcock, President Grant's private secretary, but neither was convicted. About two hundred forty distillers and revenue officers pleaded guilty or were convicted in court, but most of the leading ones were pardoned. The total amount of which the government was defrauded was $1,650,000.

WHIST, a well-known game at cards, first clearly described by Edmond Hoyle, in his *Short Treatise on the Game of Whist* (1743). The game is played with the full pack of fifty-two cards, by four persons, two being partners against the other two, each player receiving thirteen cards, dealt out one by one in rotation. The last card dealt is turned face up and is called the trump card; it gives a special power to the suit to which it belongs. The cards rank ace (highest), king, queen, knave, and the others rank according to their number of spots. Play is commenced by the person on the left hand of the dealer, who lays down a card face up on the table; the other players follow in succession, with cards of the same suit, if they have them. When all have played, the player who has laid the highest card takes the four cards laid down, which constitute a trick. The winner of the trick then leads, as the first of a new trick, the winner of which becomes the leader, and so on. When a player cannot play a card of the same suit, he may play one of the trump suit and take the trick, or he may lay one of a different suit, which gives him no chance of winning the trick. When the hand is played out, the score is taken as follows: The partners who conjointly gain the majority of tricks score 1 point for every trick taken above six. The ace, king, queen and knave of the trump suit are called honors, in some systems of play, and count 1 each for the side who holds them; if one side hold three honors, they count 2 by honors, as the opposite side can have but one honor; if one side hold all the honors, 4 by honors is counted; should the honors be equally divided, neither side counts. In *long whist,* ten of these points make a game. In *short whist,* the number has been reduced to five, and in this form it is common to count by tricks alone. A rubber consists of a series of three games and is won by the side that secures two of them. In *duplicate whist* the game is played with as many sets of cards as desired. Each hand, as it is played, is laid aside, and at the close of the series of games the hands are exchanged, so that each game is played a second time, partners playing the hands of their opponents. The side that makes the greater number of points in the series wins.

Bridge Whist, or, more commonly, **Bridge,** is played in the same manner as whist except that the dealer or his partner declares what shall be trumps, and that the dealer's partner takes no further part in the playing of that particular hand. It the dealer feels that his own hand does not permit a satisfactory declaration of trumps, he may "bridge it" to his partner, whose duty it then is to make the trump. A hand may be played without trumps if the dealer or his partner prefer. The dealer's partner lays his hand face up on the table after his opponent has led his first card.

Scoring: If "no trumps" is the declaration, each trick over six (a "book") counts twelve points, if hearts, eight points; if dia-

monds, six points; if clubs, four points; if spades, two points. The side first scoring 30 points wins a game.

The "honor" score is more complicated than in whist. The honor cards are the ace, king, queen, knave or jack and ten of the trump suit. If the declaration is "no trumps," the four aces are counted honors. The honor score is kept separately from the game score, and is only added in at the end of the rubber to determine the winner of the rubber. *Chicane* occurs when a player holds no trumps; his side adds to its honor score twice the value of a trick. When one side takes all 13 tricks, it makes a *grand slam,* which adds 40 points to the honor score; if 12 tricks are taken, it is a *little slam,* and adds 20 points to the honor score.

In "no trumps" each honor counts ten, provided one side holds at least three aces, but four aces held in one hand count 100. The following table shows the value of the remaining various combinations of honors:

	Spades	Clubs	Diamonds	Hearts
Three honors, called "simple"	4	8	12	16
Four honors (in 2 hands)	8	16	24	32
Four honors (in 1 hand)	16	32	48	64
Five honors (in 2 hands)	18	36	54	72
Five honors (in 1 hand)	20	40	60	80

Doubling. A player may "double" the value of a trick. A "double" means that he believes he can take more tricks than the dealer and his partner. The dealer or his partner may "redouble," in which case each trick counts four times the original value. It is customary to limit the value of a trick to 100.

Royal Spades. This is a common variety of declaring trumps. If spades are trumps under the ordinary rules, a strong spade hand is practically worthless. The dealer only may declare "royal spades" trumps; in this case each trick counts ten.

Auction Bridge. This is a variety of bridge which has almost displaced ordinary bridge. The methods of play are exactly the same, except that each of the players bids in turn, for the privilege of declaring what shall be trump. The method of scoring is slightly different. The rules for the play of cards in all forms of bridge are so complex that considerable study is required to make one a proficient bridge player. The game requires a good memory; expert players can recall at any stage of the game just which cards have already been played.

Authoritative books on bridge have been written by Elwell, Foster and Dalton.

WHISTLER, *whis'lur,* JAMES ABBOTT MCNEILL (1834–1903), an American painter and etcher. He was born at Lowell, Mass., of a prominent family, his father being a distinguished engineer in the United States army. The son was sent to West Point Military Academy, but after three years of uncongenial study he turned to art. He studied in France and England, and in time established a reputation as an etcher, taking rank with the greatest of etchers, Rembrandt. He became famous also for his paintings, pastels and lithograph drawings, which were marked by a unique originality. As a draughtsman Whistler was a consummate master, but in his pictures form was subordinated to color.

Whistler called his paintings nocturnes, symphonies, arrangements. They were executed in one color tone or two related tones, always in a subdued key. His London scenes, under cover of the night or fog, Venetian sketches and studies of the sea, are expressions of poetic moods rather than representations of actual scenes. Whistler's eccentricities brought him into continual conflict with artists and critics, who learned to fear his keen wit and incisive satire.

After 1859 Whistler lived chiefly in London and was for a time president of the Royal Society of British Artists. His best-known painting is a portrait of his mother, in the Luxembourg gallery, Paris. His etchings and paintings form a part of the permanent collections of all the greatest galleries. The best collection of his work is in the National Gallery, Washington, D. C. The artist possessed an unusual gift of literary expression and wrote, among other things, *Ten O'clock, Baronet and Butterfly* and *The Gentle Art of Making Enemies.*

WHITE, according to the theory of color, is that color which is a combination of all the colors of the solar spectrum—violet, indigo, blue, green, yellow, orange and red. The observer watching a beam of sunlight passing through a glass prism can see these colors, and they are also beautifully apparent in the rainbow. In practical usage a pure white pigment cannot be obtained by mixing together pigments corresponding to the seven spectrum colors, for pure pigments cannot be secured. Though white is called a color,

in reality it is the presence of all colors. See COLOR; LIGHT.

WHITE, ANDREW DICKSON (1832–1918), an American educator, author and diplomat, born at Homer, N. Y. He was educated at Yale, the College of France and the University of Berlin. For a time he was professor of history and literature in the University of Michigan, and when Cornell University was founded he was chosen its first president. He retained the position for eighteen years, and when he resigned he bequeathed to the institution his historical library of 30,000 volumes. In recognition of this and other bequests, the departments of history and economics at Cornell were reorganized as the White School of History and Political Science.

In the course of his college presidency Dr. White rendered important service to the government. He obtained leave of absence and was United States minister to Germany from 1879 to 1881. After he severed his connection with the university, he served the government in several important diplomatic posts, as minister to Russia, as one of the commissioners to investigate the Venezuela boundary, for five years as ambassador to Germany and as president of the United States delegation to the Hague Peace Conference.

He is the author of numerous works on political and diplomatic subjects and of a large number of magazine articles. Among his most important works are *The Warfare of Science against Theology, Studies in General History, the New Germany, the European Schools of History, Chapters from My Diplomatic Life* and *Seven Great Statesmen.*

WHITE, EDWARD DOUGLASS (1845–), an American jurist, Chief Justice of the United States Supreme Court. He was born at Lafourche, La., educated at Mount Saint Mary's in Maryland, at the Jesuit College in New Orleans and at Georgetown (D. C.) College. He served during the Civil War in the Confederate army, after the war studied law, was admitted to the bar, entered politics and was state senator from 1874 to 1878. From the latter date until 1891 he was an associate justice of the Louisiana Supreme Court. After three years' service as United States Senator he was appointed Associate Justice of the United States Supreme Court, becoming Chief Justice in 1910, by appointment of President Taft.

WHITE, RICHARD GRANT (1821–1885), an American scholar and critic. He was educated for the law, but his literary tendencies drew him from a legal career, and his writings on Shakespeare soon made him recognized as one of the most prominent of Shakespearean scholars. Among his works are *Words and Their Uses, Everyday English, England Without and Within, Studies in Shakespeare.* His *Riverside Edition of Shakespeare* has had wide popularity.

WHITE, STEWART EDWARD (1873–), an American novelist, born in Grand Rapids, Mich., and educated at the University of Michigan. He spent his boyhood among the rivermen of Michigan and early acquired a liking for the forest, which he has so vividly described in *The Forest* and many of his other books. He has written many short stories, as well as several novels. Among his books are *The Blazed Trail, Conjuror's House, The Mountains, The Silent Places, The Rules of the Game, The Leopard Woman* and *The Forty-Niners.*

WHITE, WILLIAM ALLEN (1868–), an American journalist and writer, born at Emporia, Kans., and educated at Emporia College and the University of Kansas. In 1895 he became owner and editor of the Emporia *Gazette,* which became under his management noted for the excellence of its policies and editorials, one of which, "What's the Matter with Kansas," gained wide publicity. In 1912 White served as chairman of publicity of the Progressive National Committee. He is a member of the National Institute of Arts and Letters. As a penetrating observer and critic of the times White holds a foremost position. His books are not numerous, but are of the very highest quality. Most of them are stories and sketches of life in the Middle West, and include *The Real Issue, The Court of Boyville, Stratagems and Spoils, In Our Town, A Certain Rich Man, God's Puppets, In the Heart of a Fool* and *The Martial Adventures of Henry and Me. The Old Order Changeth,* a review of changing conditions in American politics, is remarkable for penetrating insight.

WHITE ANT. See TERMITES.

WHITECAPS, in United States history, a name applied, because of the manner of their disguise, to a body of men who assumed the punishment of offenses against a community. In 1880 lawless bands in Southern Indiana undertook to control that section.

At an earlier date a band calling themselves the Knights of the Golden Circle was active in the same district. Whitecaps adopted all methods, from warning and intimidation to actual violence. The Whitecaps were not able long to continue their activities. The chief reason for the rise of such organizations is the slowness with which the law is often administered and the injustice arising therefrom.

WHITEFIELD, *whit'feeld*, GEORGE (1714–1770), an English evangelist, founder of the Calvinistic Methodists, born at Gloucester, England. At the age of eighteen he entered, as servitor, Pembroke College, Oxford. There he met the Wesleys, and became active in their organization, called derisively the "Holy Club." After his ordination as deacon he followed the Wesleys to America, but soon returned to England to raise money for an orphanage in Georgia. Subsequently he made six trips to America, preaching in Georgia, Pennsylvania, and New England. He preached in England, Scotland and Wales, and is said to have delivered 18,000 sermons. His Calvinistic doctrines separated him from the Episcopal Church and ultimately from the Wesleys, and in 1743 he founded the Calvinistic Methodist Society, which, owing to its loose organization, disintegrated after the founder's death, which occurred at Newburyport, Mass. The members joined the followers of Wesley, from which nucleus grew the denomination known as Methodists. See WESLEY.

WHITE'FISH, a very important freshwater food fish of the salmon family, found in northern waters of both hemispheres. The common whitefish has an elongated body, with a hump back. The head is small and conical and the mouth toothless. Above, the color is bluish or olive, underneath, silvery. These fish live in deep water, feeding on mollusks, insects and larvae, but in the spawning season they migrate to shallow water in shoals. The common whitefish found in the Great Lakes is the most important freshwater fish in America. The yield of this fish for a single year in that country and Canada has been more than 30,000,000 pounds, valued at $1,500,000. So important is the industry that the United States Fish Commission has taken measures to promote the propagation of these fish.

WHITE HOUSE, called also the EXECUTIVE MANSION, the residence of the President of the United States, at Washington. It is on Pennsylvania Avenue, near several government administration buildings, and it is surrounded by a fine park. The first house on the site was occupied by President Adams in 1800. In 1814 the British army burned it, and the present building was completed in 1829. Extensive modifications have recently been made, and the building has been finished, practically according to the plans of the architect, James Hoban, who designed it in 1792. It fronts upon the Potomac, though the entrance on Pennsylvania Avenue is the one in general use. The mansion is of freestone painted white, and is built in the colonial style, with long wings and an Ionic portico. On the second floor are the private apartments of the President and his family. Below are reception rooms, including the large East Room, in which public receptions are held, the Blue Room, in which diplomats making social calls are received, the Red Room, the Green Room, the State dining room and the conservatory. An important recent addition to the building is a long wing containing the business offices of the President and his secretaries.

WHITE LEAD, a heavy white powder consisting of seventy-five per cent white lead and twenty-five per cent hydrated lead oxide. It is used extensively in the manufacture of white paint, and is prepared by several processes, that most generally employed being what is called the Dutch, or stack, process. Coils of lead are placed in the upper part of an earthen pot containing acetic acid. These pots are stacked, covered with fermenting tan bark or manure, and allowed to remain so for two or three months, in the course of which time the metal is changed to a white powder, known as white lead. In the French process a boric salt of lead is prepared, and from it boric carbonate is precipitated by means of carbon dioxide. There are several other processes, some of them electric. White lead is valuable as a pigment, because it has body and purity of color. It dries quickly and does not crack. Its poisonous quality should not be lost sight of.

WHITE MOUNTAINS, a short range of the Appalachian system, situated in the north-central part of New Hampshire, extending approximately northeast and southwest. Because of their lofty summits these mountains are called the "top of New England."

The mountains rest upon a plateau about forty-five miles long, thirty miles wide and 1,600 feet above sea level. Upon this elevation some twenty peaks rise to varying heights. Some of these are separated from one another by narrow valleys, called notches. The mountains are clustered in two groups, of which the eastern is generally known as the White Mountains, and the western, as the Franconia Mountains. These groups are separated by a tableland, varying in width from ten to twenty miles. The principal peaks in the White Mountains are in the Presidential range, so named from the names of the peaks. Of these, Mount Washington, 6,293 feet, is the highest and is also the second highest in the Appalachian system. The other important peaks are Adams, Jefferson, Clay, Monroe, Madison and Boot Spur, all of which exceed 5,000 feet, while Franklin, Pleasant, Clinton and Webster have altitudes of 4,000 feet or more. In the Franconia group the most prominent peaks are Lafayette, 5,269 feet, and Moosilaukee, Liberty and Profile, all exceeding 4,000 feet. Intermingled with these prominent peaks in each group are numerous other lower mountains.

The White Mountains are traversed by the famous Crawford Notch, a narrow defile, lined with walls 2,000 feet high, through which the Saco River wends its way toward the sea. The other objects of special interest in this group of mountains are Tuckerman's Ravine, a deep gorge on the south side of Mount Washington, which is always partially filled with snow, and the summit of Mount Washington, which is reached both by carriage road and by railway, the first cog wheel railway in the world. On the summit are a hotel and a station of the United States Weather Bureau.

The principal object of interest in the Franconia Mountains is the Profile, or Old Man of the Mountains. This is a representation of the human face, formed by the projection of three rocks from the face of a nearly perpendicular cliff on the east of Cannon or Profile Mountain. One rock forms the forehead; the second, the nose and mouth, and the third, the chin. The profile is about 1,500 feet above the road from which it is seen, and it is ninety feet in length. It looks down upon a beautiful little lake known as the "Old man's wash bowl." It was an object of worship by the Indians for centuries before it was known to white men, and it is supposed to have given Hawthorne the inspiration which enabled him to write his beautiful allegory, *The Great Stone Face.* Near by is Echo Lake, a beautiful sheet of water, so enclosed by hills that an ordinary tone of the voice is repeated five times.

The summits of the White Mountains are bare and are composed of a variety of rock known as mica schist. The reflection of the sunlight upon this rock, when seen at a distance, gives the mountains the appearance of being covered with snow; hence the name, White Mountains or White Hills. For a century these mountains have been the great playground of New England. Their bases and sides are clothed with forests, among which are many winding roads and enticing walks. Clear, rushing streams and sparkling cascades surprise the traveler at many a turn in the path, and summits easily reached afford enchanting views.

WHITE PLAINS, Battle of. When Washington evacuated Long Island he moved his main force to White Plains, N. Y., on October 23, 1776. An outpost of 1,400 men was stationed on Chatterton Hill. On this outpost a British force of 4,000 made attack on October 28, routing the Americans, who withdrew to the main camp. This engagement is known as the Battle of White Plains.

WHITE RIVER, the principal tributary of the Wabash in Indiana. It is formed by the union of the East and West branches, which rise near the eastern boundary of the state and flow in a general westerly direction. The two streams unite near Petersburg, and the main stream then flows southwest for fifty miles and joins the Wabash just above Mount Carmel, Ill. On the West Fork are situated Indianapolis, the state capital, Noblesville, Anderson and Martinsville, the latter at the head of navigation. The East Fork is navigable to Rockford.

WHITE RIVER, a river of Arkansas, which rises in the northwestern part of the state, in the Ozark Mountains, where it is formed by several small streams, and flows northeastward into Missouri, returns into Arkansas and, after a general southeasterly and southerly course, enters the Mississippi fourteen miles above the mouth of the Arkansas. Its length is about 800 miles. Locks and dams make it navigable for river steamers about 480 miles. The large towns on its banks are Clarendon, Batesville and Newport.

WHITE SEA, a large arm of the Arctic Ocean, which penetrates Northern Russia to a distance of about 500 miles. The width ranges from thirty-five to 150 miles. It is broad at the northern entrance, but near its middle it narrows to a strait. Below this it spreads out in three large branches—Kandalak Bay, in the northwest, and Onega and Dwina bays, in the southeast. The chief rivers flowing into it are the Onega, the Dwina and the Mezen. Onega and Archangel are the principal ports. This sea is ice-bound from September to June, but it has a brisk summer trade, being connected by canals with the Baltic and with the Black and Caspian seas.

WHITLOCK, Brand (1869–), an American diplomat, municipal reformer and writer. He was born at Urbana, Ohio, and was privately educated there. In his early years he had much experience as a newspaper reporter in Toledo, Ohio, and Chicago, Ill. He studied law, and in 1897 established a successful practice in Toledo. His books describing corruption in politics and injustice in business attracted much attention. In 1905 he was elected mayor of Toledo and three times thereafter, but declined a fifth nomination. In 1913 he was appointed by President Wilson United States minister to Belgium, and in that position gained the admiration of the world at the beginning of the World War through the tact, energy and efficiency shown in handling the difficult situation. In 1919 his post was raised to the rank of ambassador. His writings include *The Happy Average, Her Infinite Variety, The Fall Guy,* a volume of short stories, *On the Enforcement of Law in Cities, The Turn of the Balance, The Gold Brick, Abraham Lincoln,* a biography, *Forty Years of It,* an autobiography. In 1918 he published *Memories of Belgium Under the German Occupation.* After publication in a leading magazine during the year 1919 the story was published in book form under the title *Belgium* (1920).

WHIT'MAN, Marcus (1802–1847), an American physician and missionary, born at Rushville, N. Y. He studied medicine at the Berkshire Medical Institution at Pittsfield, Mass., practiced four years in Canada, and in 1836 was sent by the American Board of Commissioners for Foreign Missions to explore the Oregon country and preach to the Indians. With his wife and two other missionaries he crossed the Rocky Mountains in 1836, taking the first wagon over the mountains. Other missionaries followed. Dissensions among them led the Board to withdraw its support; Whitman journeyed from the settlement, near the site of Walla Walla, to Boston, traveling much of the way on foot, and prevailed upon the Board to alter its decision. Whitman, his wife and twelve companions were murdered by Indians in 1847.

WHITMAN, Walt (1819–1892), an American poet, born at West Hills, Long Island, N. Y. He left the public schools of Brooklyn at the age of thirteen and applied himself to his father's trade, that of carpenter. Later he worked as a printer, school teacher and as general writer for the press. In these early years, as later, he sought with characteristic democracy the society of working men, and had many friends among them. During the Civil War he gave splendid service in the hospitals of Virginia and Washington, and permanently injured his health. At the close of the war he became a clerk in the Interior and Treasury departments at Washington, remaining until 1874, when a stroke of paralysis compelled him to resign.

In 1855 the first edition of his *Leaves of Grass* had been issued, and much of his later life was given up to the enlargement of this originally small volume. Whitman's avowed purpose was to be the prophet of democracy and of the common brotherhood of man. In his desire to free himself from all traditional trammels and to achieve naturalism, he often becomes tiresome. Though his work shocks many lovers of poetry by its lack of rhyme and rhythm, among discriminating critics it takes high rank, and it is becoming increasingly popular, not only among American readers, but also in Europe.

WHITNEY, Eli (1765–1825), an American inventor, famous as the originator of the cotton gin. He was born at Westborough, Mass., and was educated at Yale College. After graduation he went to Georgia as a teacher; later he took up the study of law. His leisure moments he often employed inventing useful devices, and, learning that the cotton industry was hampered by the difficult work of separating the cotton fiber from the seeds by hand, he set to work to invent a remedy. He labored under great disadvantage, for he had to make his own tools, but in time he produced a machine which would seed a thousand pounds in

the same time that five could be seeded by hand.

At this juncture his workshop was broken into, and his apparatus was stolen before he could secure a patent. However, he and a man named Miller formed a partnership, and in 1793 they went to Connecticut to manufacture cotton gins; but the lawsuits in defense of Whitney's rights took all his profits, besides $50,000 voted him by the state of South Carolina. Finally, in 1798, Whitney turned his attention to the manufacture of firearms; he established a factory at Whitneyville, Conn., received large orders from the government and amassed a fortune. From his invention of the cotton gin, one of the most important of the whole series of inventions connected with the cotton industry, he reaped only belated fame. See COTTON GIN.

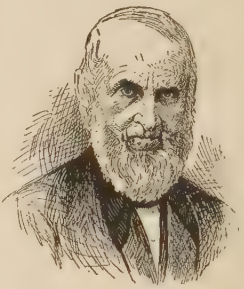
ELI WHITNEY

WHITNEY, JAMES PLINY, Sir (1843–1914), a Canadian statesman, born at Williamsburg, Ont., and educated at the Cornwall grammar school. He began the practice of law in 1876, and in 1890 was appointed queen's counsel. He was first elected to the legislature of Ontario in 1888, and was returned at each election up to and including that of 1908. In 1896 he was chosen leader of the opposition, and in 1905 was called upon to form a new government. In this he became the Prime Minister and assumed the office of Attorney-General. Later he relinquished the latter portfolio and became President of the Council. The honor of knighthood was conferred upon him by H. R. H. the Prince of Wales, in 1908, on the occasion of the celebration of the Quebec Tercentenary. He continued as Premier until his death.

WHITNEY, MOUNT, the highest peak in the United States proper, situated in the southern part of the California Sierra Nevadas. Its altitude is 14,502 feet, and its eastern slope rises steeply to a height of nearly 11,000 feet. Mount Whitney was named in honor of the noted geologist, Josiah Dwight Whitney.

WHIT'TIER, JOHN GREENLEAF (1807–1892), one of the foremost American poets. He was born near the town of Haverhill, Mass., Dec. 17, 1807. His parents were Quakers, who were always anxious to advance the interests of their children. The farm house was not far from the Merrimac River and near it was the brook whose "liquid lip" was companionship to them.

The young Whittier worked on his father's farm and learned the shoemaker's trade. He had little early education, except a few terms in the district school, and the wider training he received from his father and mother. Of books he had few and those not the best adapted to a child. The Bible, however, was thoroughly studied and its literary treasures fully appreciated. A volume of Burns fell into his hand and gave him the poetic inspiration. At the age of eighteen Whittier began writing for the press. One of his poems which appeared in the Newburyport *Free Press* attracted the attention of William Lloyd Garrison, its editor. Garrison visited the young poet at his home and induced him to give his pen and his life to the cause of freedom. This was the beginning of a life-long friendship. Garrison urged Whittier to obtain a better education, and assisted him in securing it.



JOHN GREENLEAF WHITTIER

Although Whittier had had comparatively little schooling, he had read widely and was well fitted to become, as he did, the chief poet of the abolition movement. In 1835 and 1836 he was a member of the legislature of Massachusetts, but ill health compelled him to resign and give up also the editorship of a paper which he was managing. In 1836 he moved to Amesbury, and some years later he went to Philadelphia, where he edited the *Pennsylvania Freeman*, an anti-slavery paper, the office of which was burned by a mob after he had been at work on it but four days. This did not compel Whittier, however, to give up the work, which he continued for two years. After his return to Amesbury, his poems on freedom continued to appear, and in 1843 a volume of ballads was published. Among his notable poems of these

years, which appeared in *The National Era,* the *New England Magazine* and the *Atlantic Monthly,* were *Songs of Labor, Maud Muller* and *Barbara Frietchie. Snowbound,* published in 1865, brought great increase to Whittier's popularity and also an improvement in his worldly circumstances. He had no family, however, and most of his money was spent in charity. He died while on a visit to Hampton Falls, N. H.

Whittier's poems on slavery were too thoroughly inspired by the occasion for which they were written, too much given over to argument on this subject, to be permanently great poetry, but their energy and sincerity made them most effective aids toward the ends to which they were directed. Among his other poems, *The Barefoot Boy, Telling the Bees, Snowbound* and *Among the Hills* are most notable. They have a homely truth to life, a fineness of sentiment, a freshness and a quiet power which will make them live.

WHOOPING COUGH, *hoop'ing kof,* a contagious disease that frequently becomes epidemic and usually affects children only, though adults may have it. It begins with the symptoms of a severe cold, which after a week or ten days develops into a peculiar cough, that ends with a whoop, caused by a forcible indrawing of the breath. These coughing paroxysms occur at rather short intervals, but between the paroxysms the person feels reasonably well and after three or four weeks the attacks occur less frequently. Within two months they disappear entirely. The cause of the disease is not thoroughly understood. It is not usually attended with fatality, except where other complications, such as pneumonia and bronchitis, set in. A child suspected of having whooping cough should be kept from other children, for the disease is highly contagious. The patient should have nourishing food and live in the open air as much as possible. The sleeping room should be well ventilated, and whenever possible it is wise to sleep on a porch or in a tent.

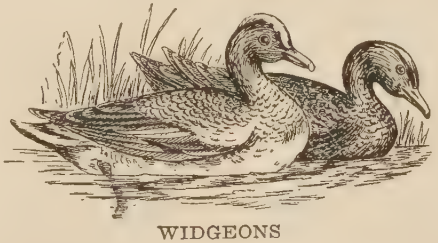
WICHITA, *wich'i taw,* KAN., the county seat of Sedgwick County, 157 miles southwest of Topeka, on the Arkansas River and on the Atchison, Topeka & Santa Fé, the Chicago, Rock Island & Pacific, the Frisco, the Missouri Pacific, the Mexico & Orient and the Midland Valley railroads. It is the center of an agricultural and stock raising district, and there is an extensive trade in cattle, pork, horses and mules, poultry, lumber, flour and alfalfa. Wichita is one of the largest broom corn markets in the world. Manufacturing establishments are extensive, and oil and gas wells are being rapidly developed in the vicinity. The educational institutions are Fairmount College, Friends' University, All Hallow's Academy and Lewis Academy. Notable buildings are the Forum, with a seating capacity of 8,000, the state Masonic Home and a Carnegie Library. There are several hospitals and children's homes. Wichita was settled by Indian traders in 1869 and named after the Wichita tribe. It was chartered as a city in 1872. In 1909 it adopted the commission form of government, and in 1917 the city manager form. Population, 1910, 52,450; in 1917, 73,597 (Federal estimate).

WICHITA FALLS, TEX., the county seat of Wichita County, 114 miles northwest of Fort Worth, on the Wichita River and on the Fort Worth & Denver City, the Missouri, Kansas & Texas, the Wichita Falls & Northwestern and the Wichita Valley railroads. It is an important manufacturing center, having flour mills, elevators, an oil refinery, brick yards, and manufactories of automobile trucks, window glass, glass jars, brooms, stores, pottery and candy. Educational institutions include an academy, a business college and a college of music and art. Wichita Falls was settled in 1882, and was incorporated as a city in 1884. Population, 1910, 8,200; in 1917, 12,749 (Federal estimate).

WIC'LIF, JOHN. See WYCLIFFE, JOHN.

WIC'OPY, or **MOOSEWOOD.** See LEATHERWOOD.

WIDGEON, *wij'un,* a wild duck found in both Europe and America. The American widgeon, which is most abundant in the



WIDGEONS

South, is often called the *bald pate,* from the white on the top of its head. It spends the winters in Central and South America and nests in Canada. The eggs, from seven to

twelve in number, are buff-white. Widgeons are notorious for their trick of robbing canvasbacks and other diving ducks of the plant food picked from the beds of streams, by snatching it from their bills as they come out of the water.

WIESBADEN, *vees'bah den*, PRUSSIA, a celebrated watering place situated in the valley of the Salzbach, about two miles from the Rhine and six miles northwest of Mainz. The town has a beautiful location among densely-wooded hills, that protect it from cold winds. Mineral springs abound. It is purely a residence town, with no industries of importance. There are in the town a number of churches of historic interest, a museum, a picture gallery, a public library, agricultural and industrial schools and an institution for the blind. Population, 1910, 109,002.

WIG'GIN, KATE DOUGLAS. See RIGGS, KATE DOUGLAS WIGGIN.

WIGHT, *wite*, ISLE OF. See ISLE OF WIGHT.

WIG'WAM, the conical tent of the American Indian. To make it he drives several saplings into the ground in a circle and fastens them together at the top. This framework he covers with grass matting or birch bark, leaving an opening at the top for the escape of smoke. A small opening in the side—always the side of the rising sun—serves as a door. This is ordinarily covered with a flapping deer-skin curtain.

WILBERFORCE, *wil'bur fohrs*, SAMUEL (1805–1873), an English clergyman, third son of William Wilberforce (see below), was born at Clapham. He was graduated from Oriel College in 1826 and two years later was ordained. He was successively curate of Checkendon church; rector of Brightstone, Isle of Wight; archdeacon of Surrey; rector of Alverstoke and canon of Winchester; chaplain to the prince, a position gained through an anti-slavery speech; dean of Westminster and bishop of Oxford, where he remained twenty-four years. Wilberforce, because of his cleverness, self-reliance, fascinating manner, persuasive power, facility and expediency, was able to cope with the difficult situation in the Church at the culmination of the Oxford Movement, when many of the High Church party, including members of his family, went over to the Roman Catholic Church. Among his writings are *Letters and Journals of Henry Martyn, Agathos, Rocky Island* and *History of the American Church;* with his brother he wrote the life of his father.

WILBERFORCE, WILLIAM (1759–1833), an English statesman and philanthropist, born at Hull, in Yorkshire. After completing his education at Saint John's College, Cambridge, in 1780 he was elected member of Parliament. In 1789 he brought forward in Parliament resolutions condemning the slave trade. In 1792 he succeeded in getting a bill for the gradual abolition of slavery through the House of Commons, but it was rejected by the House of Lords. Year after year he pressed this measure, but it was always defeated until 1807, when it was passed, during the short administration of Fox. He then devoted his energies to bringing about the total abolition of slavery, and three days before his death he was informed that the House of Commons had passed a bill which abolished slavery in the British colonies. Wilberforce was a man of remarkable versatility and personal attractiveness, one of the most lovable characters in the history of British politics.

WIL'COX, ELLA WHEELER (1855-1919), an American poet and essayist. She was born in Wisconsin, was educated at the University of Wisconsin and was married in 1884 to Robert M. Wilcox. From her girlhood she contributed freely to newspapers and magazines, and some of her writings have acquired considerable popularity. Her volumes of verse include *Poems of Pleasure, Poems of Passion, Poems of Power* and *Maurine*; while among her prose works are *An Ambitious Man; Men, Women and Emotions, A Woman of the World* and *The Worlds and I.*

WILD CAT, or **CAT'AMOUNT**, a wild animal belonging to the same family as the domestic cat, but of larger size than the latter.

WILD CAT

The European wild cat once common, but now seen only in the most isolated regions, has a very long body and legs and a short, thick tail. Its fur is yellowish-gray, with

a dark marking down the back and other dark stripes on the sides and rings on the tail. In the United States the name is often applied to the lynx (which see).

WILDCAT BANKS, unstable banking institutions under loose state control, whose reckless issue of notes, followed by inability to redeem the same, were responsible for a series of financial panics in the United States in the generation preceding the Civil War. The most disastrous of these panics was that of 1837. President Jackson having removed the government deposits from the United States Bank and placed them in state banks, wildcat banks sprang up like mushrooms. Alarmed by the subsequent wild speculation, the President sought to correct the evil by ordering, through his famous "Specie Circular," that only gold and silver be received in payment for public lands. This precipitated a crash, and large numbers of wildcat banks failed. See JACKSON, ANDREW.

WILDE, OSCAR FINGAL O'FLAHERTIE WILLS (1856–1900), dramatist, essayist and novelist, was born at Dublin, Ireland, the son of a noted surgeon. After graduation from Oxford, where he won honors in literature, he went to live in London and became leader of a so-called aesthetic movement. His affectation of long hair, velvet knee breeches and a languishing air furnished a theme for much witty satire. He was lampooned by Du Maurier in *Punch* and by Gilbert in his opera *Patience.*

In 1881 Wilde published a volume of poems, and in 1888 a collection of fairy stories called *The Happy Prince and Other Tales.* These won high praise. Then appeared *The Picture of Dorian Gray,* a novel; *Intentions,* a volume of essays, and the plays *Lady Windermere's Fan, A Woman of No Importance, The Ideal Husband* and *The Importance of Being in Earnest.* His drama *Salome* has been set to music by Richard Strauss. In 1895 Wilde was convicted of a serious offense against morality, and was condemned to two years' penal servitude. In prison he wrote *A Ballad of Reading Gaol,* a poem of much force, and *De Profundis.* His last years were spent in seclusion on the Continent.

WIL'DERNESS, BATTLE OF THE, the first important battle of Grant's famous Virginia campaign in 1864, between a force of 120,000 men under General Meade, supported by Warren, Sedgwick and Hancock, and with General Grant in supreme command, and the Army of Northern Virginia, under Lee, comprising about 62,000 men under Ewell, Hill and Longstreet. The Federals were encamped on the northern bank of the Rapidan River, near Culpepper Court House, while the Confederates were south of the river, on the edge of the Wilderness, where Lee had completely baffled Hooker's army after the Battle of Chancellorsville. Grant began crossing the river on May 3, without a contest, Lee being confident that he could defeat the Federals when they had once become entangled in the Wilderness, a dense forest with thick underbrush. In the morning of May 5, General Warren, who was in the van of the Federal force, was met by General Ewell, and an all-day battle resulted, with little advantage to either contestant. Grant at first believed that he was confronting only a part of Lee's army, but soon ordered Hancock to come up from Chancellorsville. Upon his arrival, he confronted General Hill, and another severe battle ensued, which paused at nightfall, only to recommence at dawn. It ended in a drawn battle; Grant had failed to make progress toward Richmond; Lee had failed to crush the opposing army. The losses of the Union forces were about 18,000; of the Confederates, from 10,000 to 12,000. See CIVIL WAR IN AMERICA.

WILHELMINA, *vil hel me'nah,* (1880–), queen of the Netherlands, born at The Hague. In 1890, on the death of her father, William III, she succeeded to the throne, her mother, who was the daughter of Prince George Victor of Naldeck, serving as regent until 1898. Wilhelmina was married in 1901 to Henry Frederick, Duke of Mecklenburg-Schwerin. Her daughter, Juliana, heiress to the throne, was born in 1909. The general unrest in Europe which followed the World War threatened the stability of her throne for a time in 1919, but she had always held the deep love of her subjects and was able to overcome the socialist tendency of the minority.

QUEEN WILHELMINA

WILKES, *wilks*, CHARLES (1798–1877), an American naval officer and explorer, born in New York City. He was educated in the common schools, entered the United States navy in 1818 and became a lieutenant in 1826. In 1838, in charge of an expedition authorized by Congress to explore the Southern Ocean, he visited many important places in the southern hemisphere, including the Philippine Islands, Hawaiian Islands, New Zealand, the Samoan and Fiji groups and many parts of South America. The mass of valuable scientific information collected on his voyages was published in several volumes. Wilkes was made a commander in 1843 and became a captain in 1855. Upon the outbreak of the Civil War he was given command of the frigate *San Jacinto*. On November 8, 1861, he overtook the English mail steamer *Trent* and arrested Mason and Slidell, the Confederate commissioners (see TRENT AFFAIR.) He was retired in 1864, and became rear-admiral in 1866.

WILKESBARRE, *wilks'bair re*, PA., the county seat of Luzerne County, 145 miles northwest of Philadelphia, on the north branch of the Susquehanna River, and on the Pennsylvania, the Lehigh Valley, the Central of New Jersey, the Delaware & Hudson, the Lackawanna & Wyoming Valley, the New York, Susquehanna & Western, and the Wilkes-Barre and Hazleton railroads. The city is unique in that it is surrounded by thirty-three municipalities, of which it is the exact center, all located in an area less in extent than that covered by the city of Des Moines. It is the retail trading center for this entire group of towns, which have an aggregate population of about 250,000. There is a population of a million and a half within a radius of fifty miles.

The city is in the heart of the anthracite region of the Wyoming Valley, the coal output of Luzerne County being greater in annual value than the entire gold production of the United States, exclusive of Alaska. Mining is the principal industry, but the abundance of fuel has made the city an important manufacturing center. The silk and lace mills are the oldest and among the largest in the United States, and there are besides manufactories of locomotives, axles and springs, wire rope, adding machines, automobiles, cutlery, flour and clothing.

The educational institutions include the Harry Hillman Academy for boys, the Wilkesbarre Institute for girls and several Catholic schools. The well-known Wyoming Seminary is at Kingston, just across the river. The Boys' Industrial Association is a unique institution, of an educational and social nature. The Osterhaut Free Library has more than 40,000 volumes, and the Wyoming Historical and Geological Society has a reference library and a notable collection of Indian relics and geological specimens and fossils. There are homes for children and aged women and several well-equipped hospitals. Important buildings are a Federal building, a courthouse, a city hall, an armory, a Grand Army hall, a Y. M. C. A., and the Irem Temple, built in Moorish style.

The city was first settled in 1769 by families from Connecticut. It was named in honor of John Wilkes and Isaac Barré, members of the British Parliament who advocated the cause of the colonists before and during the Revolution. In 1784, during the controversy between Pennsylvania and Connecticut over the sovereignty of the Wyoming Valley, the settlement was burned. The Wyoming Monument marks the site of the conflict of the Americans with the loyalists and Indians, July 3, 1778. Wilkesbarre was made the county seat in 1786 and was incorporated as a borough in 1806. After the Civil War it grew rapidly and was chartered as a city in 1871. The commission form of government was adopted in 1903. Population, 1910, 67,105; in 1917, 78,334 (Federal estimate), making it the fifth city in size.

WILKIE, DAVID, Sir (1785–1841), a celebrated Scottish painter. He received his early art training at the Trustee's Academy, Edinburgh, and entered the schools of the Royal Academy, London, in 1805. His first works were scenes from every-day life, in which he showed the influence of the Dutch masters. In his later work, after his visits to Italy and Spain, he showed the influence of Titian and Velasquez and changed his theme to historical and portrait subjects. In 1811 he was made a member of the Royal Academy. Among his pictures are the *Blind Fiddler, Rent Day, The Village Festival, Penny Wedding, Cotter's Saturday Night, Duncan Gray, Blind Man's Buff, John Knox preaching before the Lords of the Congregation* and *Wellington Writing a Dispatch.*

WIL'KINS, MARY ELEANOR. See FREEMAN, MARY E. WILKINS.

WILL, that mental activity which gives a human being power of choice and action. Desire or feeling lies at the foundation of will, and the two are so interwoven that they cannot be separated.

Development of the Will. A complete act of will includes four successive steps—impulse, desire, choice and action.

Impulse. In the infant, will exists only as a possibility. The first actions of a young child are impulsive and instinctive, and are impelled without thought or purpose; yet it is from such actions that will is developed. Every idea contains a motor element. This is readily seen in the motor effect of such ideas as that of a worm or of a mountain. The idea *worm,* when entertained, causes one to cast the eye downward; the idea *mountain* causes one to look upward. One seldom thinks of this element in ideas, but self-examination soon reveals it. It is from this motor element that impulse arises. The child, from watching others, soon learns to imitate their actions. At first these imitations are impulsive, but when the impulse has been repeated a number of times it leads to a wish on the part of the child to perform the act.

Desire. This wish is a *desire,* which has been developed from the impulse and is now directed to a definite end. The accomplishment of this desire calls for voluntary action, hence the will is brought into play. But the mind often entertains two or more desires at the same time, and these may be so related as to oppose each other. This is readily illustrated in the case of a child who is at play with a toy in which he is interested. On the table in the room is an apple which he desires. He cannot obtain this without climbing upon a chair. While he desires the apple, he also desires to continue playing with the toy. He may have been told that he must not climb upon chairs, and, possibly, that he must not touch the apple. He desires to obey his mother's command, but he also desires the apple. This he cannot obtain, without disobeying his mother and leaving his toy.

Choice and Action. The child's desires are in conflict, and this leads to *deliberation,* another step in the development of will. He weighs his desires: Shall he continue playing with his toy, or shall he get the apple? During the deliberation he hesitates. He finally decides to get the apple, and with the acceptance of this desire, the others are dropped. In making this decision comes *choice,* the third step in an act of will. The desire which was chosen now becomes a motive, which leads to *action,* the final step. Without this, however strong his desire, the child would never obtain the apple.

Value of Self-Dependence. These successive steps—impulse, desire, deliberation, choice and action—are all included in an act of will, but in the mature mind, the most common voluntary acts have become habitual to such an extent that the deliberative phase is scarcely noticed. In choosing between desires, one holds in mind past experiences and the desires under consideration, and one also imagines the conditions that will arise from the choice of each of the desires in conflict. This process frequently makes choice a difficult step, and one occasionally calls upon others to decide for him. Choosing a certain course of action is based upon a desire of a peculiarly personal nature, and no one except the person involved is likely to make a satisfactory choice. For this reason each one should make his own choices. The ability to choose varies widely with different people. Some make right choices quickly, while others after long deliberation make unwise choices. Still others choose without deliberation and are liable to spend considerable time in attempting to extricate themselves from undesirable conditions.

Inhibition. One of the highest functions of the will is to prevent action. This function is known as *inhibition.* Its action depends upon conflicting perceptions. If you stoop to pick an apple from the ground, and, as you are about to grasp it, you discover a hornet upon it, your action is instantly arrested, because the injury which you would probably receive from the hornet conflicts with the satisfaction you would obtain from possessing the apple. Action is also arrested by the memory of past experiences. One who has been burned by coming in contact with a flame or a hot stove will not voluntarily come in contact with such an object again. Finally, the power of inhibition is called forth by the conflict of ideas, which necessitates deliberation and choice. This principle has already been illustrated, in describing the conflict of desires.

Inhibition is characteristic of a well-trained will. It develops late, and in children and uncivilized people it seldom reaches

full development. Such persons act upon impulse, while the man with a disciplined mind delays action until after careful deliberation. One in vigorous health and full of energy is more likely to act without deliberation than one whose physical conditions are the opposite. One who is hopeful is more likely to act than one who is doubtful. Because of their lack of experience, children and young people often attempt to perform the impossible, and it is only by repeated failures that they learn the value of deliberation.

Training the Will. The will is one of the most important functions of the mind, and upon its right development depends one's success or failure in life. Because of this, those having care of young children should give the training of the will careful attention. The following principles will be found helpful in securing desired results in will training.

(1) The power to act lies within the nervous system. During childhood and youth this system is plastic and is easily guided in any line of action.

(2) The greatest function of the will is in the formation of habits. Habits formed during childhood are the seeds of character. The parent and teacher cannot give too careful attention to habits formed in the home and the school.

(3) The child is a bundle of impulses and is filled to overflowing with nervous energy. He must act, and it is the duty of both parent and teacher to furnish definite ends toward which his activity may be directed.

(4) Ability to make right choices is important in the formation of character. This ability is acquired and strengthened by practice, and children should be led to make right choices as early in life as possible and to continue the practice until it becomes habitual.

(5) Environment has much to do with the choices made by both children and adults. No one likes to go against the sentiment of his community; hence the proper home atmosphere and school atmosphere are important factors in training the will.

(6) Attention is a fundamental act of will. The child's power of attention should be cultivated and strengthened day by day. See Attention.

(7) All right choices should be acted upon. When a choice is made, it should be carried out. Failure to act has a disastrous effect upon the character, and those who let their desires evaporate without action become the do-nothings of society.

(8) Will is strengthened by effort; therefore, within the limits of their ability, children should frequently be assigned difficult tasks, both at home and at school. Without this training they will never form the habit of persistent effort, which is necessary to success.

(9) Stubbornness is not evidence of a trained will or of a strong will. One with a trained will decides after due deliberation and in accordance with the best judgment a person can exercise. The stubborn person decides in accordance with his feelings and without deliberation.

Related Articles. Consult the following titles for additional information:

Attention	Instinct
Feeling	Memory
Habit	Psychology

WILL, in law, the legal declaration of a person's wishes as to the distribution of property after his death. It is an individually-made law, which, if its intent is clear beyond doubt and it does not conflict with public policy, no court can set aside. Technically, a *will* can dispose only of real property, the document relating to the disposal of personal property being called a *testament.*

In most states no will or testament is valid unless it is in writing and signed at the end by the maker, or *testator,* or by some person in his presence and by his direction. This signature must be made and the document acknowledged by the testator, in the presence of two or more witnesses, not beneficiaries by the will, present at the same time, and such witnesses must attest and sign the will in the presence of the testator. The will usually names one or more persons, known as executors, to direct the execution of its provisions. If none such is named, or if no will is made, the court appoints an administrator to the estate. In the latter case the property goes to lineal descendants (For the rules for the disposal of the estate in the latter case, see DESCENT). Any alteration in the will must be duly signed by the testator and the witnesses. An addition to the will is known as a *codicil.* A will may be revoked by canceling, obliteration, tearing or burning, by a new will expressly revoking the former, or by one containing provisions inconsistent with it. The destruction of a later will revives a former will. At the death of the testator the will is recorded in the probate court, and that court directs settlements. See PROBATE.

WILLAMETTE, *wil lah'met,* a river of Oregon, 250 miles in length, formed by the junction of the McKenzie and the Middle Fork. It rises in the Cascade Mountains, flows northward through a fertile valley and into the Columbia River. It is navigable to

Portland, fifteen miles from its mouth. A lock canal enables small craft to go around Willamette Falls and ascend 150 miles to Eugene.

WILLARD, Emma Hart (1787–1870), one of the pioneers in the cause of women's higher education in America, and founder of the Emma Willard School. She was born at Berlin, Conn. She taught a number of years, became principal of a girls' academy at Middlebury, Vt., and in 1809 married Dr. John Willard. In 1814 she wrote and submitted to New York state officials *A Plan for Improving Female Education,* with the result that she was able to establish at Waterford, N. Y. a girls' seminary partly supported by the state. This institution was removed to Troy and the name afterward changed to Emma Willard School. Under Mrs. Willard's management, it gained a wide reputation and is still one of the leading schools for the higher education of women. Mrs. Willard wrote a number of text-books, and was also the author of the famous poem *Rocked in the Cradle of the Deep.*

WILLARD, Frances Elizabeth (1839–1898), an American educator and reformer, born at Churchville, N. Y., and educated at Northwestern Female College, Evanston, Ill. She taught school for several years, traveled in Europe and the East and on her return became professor of æsthetics in Northwestern University and later its dean of women. She resigned in 1874, became secretary of the Woman's Christian Temperance Union and later its president, holding the latter office until her death.

FRANCES E. WILLARD

Miss Willard gave her entire time thereafter to the organization, traveling throughout the country from year to year, lecturing in prominent cities and writing extensively for the *Union Signal,* the organization's periodical, which she edited for six years. In 1883 she visited England and helped to form the World's Christian Temperance Union. Her former home, "Rest Cottage," in Evanston, is yet the headquarters of the national organization. In addition to articles in papers and periodicals, she was the author of *Nineteen Beautiful Years, Woman and Temperance, Glimpses of Fifty Years* and other books. See Woman's Christian Temperance Union.

WILLIAM I, surnamed The Conqueror (1027–1087), the first Norman king of England. He was the natural son of Robert II, Duke of Normandy, and as his father died without a legitimate heir, William became ruler and governed Normany with vigor and ability.

On the death of Edward the Confessor he claimed the crown of England as the nearest in line of succession. In 1066 he invaded England, overthrew Harold, the rival claimant, and then set about to subdue the people. The resistance of two powerful English nobles, Edwin and Morcar, who had formed an alliance with the kings of Scotland and Denmark and with the prince of North Wales, soon after drew William to the north, where he obliged Malcolm, king of Scotland, to swear allegiance. In 1069 an insurrection broke out in the north, and at the same time the English resumed arms in the eastern and southern counties, only, however, to be put down mercilessly.

William then established the administration of law and justice on a firm basis throughout England, conferred numerous grants of land on his own followers and introduced the feudal system of Normandy, in regard to land tenure and services. Toward the end of his reign he instituted that general survey of the landed property of the kingdom, the record of which still exists, under the title *Domesday Book.* Although the English had been completely subdued, William had to suppress several formidable revolts of his own vassals, and these he put down with an iron hand. Some of his measures were extremely severe, but they were in keeping with an age of brutality.

As a man William was not without a certain sense of equity and fair dealing, but was willing to sacrifice everything to make his kingdom stable. Viewed in the perspective of history, he is seen as one of the makers of modern England. See Hastings, Battle of; Domesday Book.

WILLIAM II (about 1056–1100), called Rufus ("the Red"), son of William the Conqueror, was crowned king at his father's death. The Norman barons were discontented with this arrangement and sought to make his elder brother, Robert, who had received Normandy, king of England, but this

project was defeated by William, with the aid of the English nobles. Having repressed the conspiracy, he forced the Norman barons to withdraw to Normandy and confiscated their English estates. On the death of Lanfranc, he also seized the estates connected with the vacant bishoprics and abbeys. In 1090 he sent an army into Normandy, to punish his brother Robert, while he himself crossed the Channel the following year. A reconciliation was effected between the two brothers, and in 1096 Robert mortgaged Normandy to his brother, for a sum sufficient to enable him to join a crusade to the Holy Land. William was shot while hunting in the New Forest, whether accidentally or otherwise is not known.

WILLIAM III (1650–1702), king of England, Scotland and Ireland. He was born at The Hague, the posthumous son of William II of Orange and Mary, daughter of Charles I of England. During his early life, all power in the Netherlands was in the hands of the grand pensionary DeWitt, but when France and England in 1672 declared war against the Netherlands, there was a popular revolt, in which DeWitt and his brother were murdered and William was declared captain-general, grand admiral and stadtholder of the United Provinces. In 1678 William concluded with France an honorable treaty at Nimeguen.

Meanwhile, William had married Mary, the daughter of James II of England. As she was heir presumptive to the English throne he kept close watch upon the policy of James II, and in 1688 issued a declaration recapitulating the unconstitutional acts of the English king and promising to secure a free Parliament to the people. Being invited over to England by the leaders of the English parties, he arrived suddenly at Torbay in November, 1688, with an army. A great part of the nobility declared themselves in his favor. In December James fled with his family to France.

The throne was then declared vacant, the Declaration of Rights was passed, and early in 1689 William and Mary were crowned. Scotland soon afterwards accepted the new sovereigns, but in Ireland, whither Louis XIV sent James with an army, the majority of the Catholics maintained the cause of the deposed king, until they were defeated at the Boyne (1690). In the war with France William was less successful; but in spite of several defeats, he finally compelled Louis to acknowledge him king of England. In 1701 James II died and Louis XIV acknowledged his son as king of England. England, Holland and the Empire had already combined against Louis, and the War of the Spanish Succession was just on the point of beginning, when William died from the effects of a fall from his horse.

WILLIAM IV (1765–1837), king of Great Britain and Ireland, the third son of George III. He was educated for the navy, and although he had no real ability, he was promoted through successive ranks, until he became lord high admiral. In 1830 he succeeded his brother George IV on the throne. The great events which render his reign memorable are the passage of the Reform Act, the abolition of slavery in the colonies and the reform of the poor laws. William himself was mentally most unfit for ruling, but his ministers had matters almost entirely in their own control. He was succeeded by his niece, Victoria, whose reign was destined to be the longest and one of the most notable in English history.

WILLIAM I (1797–1888), king of Prussia and first emperor of Germany, crowned as such at Versailles in 1871. He was the son of Frederick William III of Prussia and Queen Louise. From his earliest years he received military training, and as early as 1814–'15 fought in the campaigns against Napoleon. He provoked the enmity of his people by his opposition to constitutional reform, to the extent of having to flee from the country at the beginning of the revolution of 1848. In 1849 he was in command of the army which crushed the uprisings in the Palatinate and Baden.

He became king of Prussia in 1861, and with the aid of his powerful minister, Bismarck, grew steadily in power. War against Denmark in 1864 was followed by war against Austria in 1866 and against France in 1870. The outcome of these conquests, in which William himself led the Prussian armies, was the consolidation of the German states into the empire whose aggressions forty years later involved the whole world in war (see GERMANY; WORLD WAR). It is an interesting fact that in 1919 German representatives signed a drastic peace treaty within one hundred feet of the spot where William I was crowned emperor. See VERSAILLES, TREATY OF.

WILLIAM II, in German, WILHELM II (1859–), the last king of Prussia and last German emperor, a monarch who rose to supreme heights of power and influence, but who became the most hated man in the world, suffering humiliation and dishonor after a reign in which Germany became one of the great world powers.

WILLIAM II

The career of this last William of the House of Hohenzollern is one of the most spectacular and one of the most tragic in history. He ascended the throne on June 15, 1888, at the age of twenty-nine, the successor of his father, Frederick III, who had reigned only three months. His mother was Victoria, princess royal of Great Britain, the sister of King Edward VII. The young emperor began his reign with a definite conception of the dignity of his office. Like his grandfather, William I, whom he revered, he believed in the divine right of kings, and almost from the outset of his imperial career there was friction between himself and his strong-willed Chancellor, Prince Bismarck. The resignation of the latter, in March, 1890, was the first striking evidence of the determination of the new ruler to exert his authority as he chose.

Notwithstanding his autocratic habit of mind, William II did much for Germany. The empire became industrially the most highly-developed country on the continent, and its expansion as a commercial nation was no less striking. Through his efforts Germany secured important holdings in Africa, Asia and the Pacific islands, and became a great colonial power. At the same time it developed into the greatest militarist nation in the world, through a system of universal service, planned and carried out with precision and iron discipline. The kaiser, as he was commonly called, took the greatest pride and delight in his finely-trained army, and there is no doubt that he had visions of its going into action some day to give Germany its "place in the sun." The navy, too, was built up and made second in strength to that of Great Britain. The influence of the kaiser was so manifest in all of this military and naval activity that he was called the "war lord of Europe." Apparently, however, he sought to cultivate only the friendship of the other nations.

The energetic German ruler was not without opposition in the empire, though he was very popular with the people as a whole. His obstinate hostility to electoral reform and his medieval conception of the kingship as a divine institution antagonized the Social Democrats, and between them and the emperor there developed a bitter feud. The emperor sought to quiet political discontent by securing good living conditions for the working people, and by such reforms as health insurance, old age pensions and the like. The Socialists refused to be diverted from their main issue, that of securing political equality for all, and to his discontent they greatly increased in numbers.

The outbreak of the great war in 1914 focused the attention of the world on Germany's emperor. The power to declare a defensive war was vested with him, and he insisted that it was in defense of the Fatherland that he signed the decree mobilizing the army. The course of events subsequent to the outbreak of the war tended to disprove this statement, and the consensus of opinion later was that he regarded the Austro-Serbian episode as an opportunity for Germany to expand territorially and commercially. A short victorious war restricted to Central Europe would put down the Pan-Slavic agitation, crush Serbia, check Russia and lay the foundation for German supremacy in the Balkan states and, eventually, in Asia. William II's ambition overreached itself. In striving to bring about German world dominion he accomplished Germany's humiliation—the loss of its colonies, its fleet, portions of its European territory and, most serious of all, the regard of the world. Justly or not, the brutalities practiced by the German forces on land and sea roused tremendous feeling against the once-honored emperor, and he reaped a whirlwind of scorn and hatred.

When the German people found that defeat faced them, they revolted and demanded new leaders. On November 28, 1918, seventeen days after his armies had demanded an armistice to save them from annihilation, William II signed a formal document of abdication, having previously sought refuge in Holland. He was received at the castle

of Count Goddard Bentinck at Amerongen, where he remained in retirement for several months. In January, 1920, the allied powers demanded that the former emperor be delivered to them for trial for war offenses; Holland refused to surrender him, although his presence was becoming increasingly embarrassing to that country. See GERMANY.

WILLIAM I, PRINCE OF ORANGE, COUNT OF NASSAU, called THE SILENT (1533–1584), founder of the Dutch Republic. He was brought up in the Catholic religion, although both his parents were Protestants. In 1544 he inherited from his cousin the principality of Orange and large estates in the Netherlands. Under Charles V he served as commander of the army of the Netherlands and governor of Holland, Zealand and Utrecht. Philip II employed him in various offices, without, however, really trusting him.

When the duke of Alva entered the Netherlands, William withdrew to Germany. His first open resistance to Spain was an invasion of Brabant in 1568. This was unsuccessful, and a second attempt in 1572 met with no better fate. William had been before this time chosen stadtholder by Holland, Utrecht, Zealand, Gelderland and Overyssel, and in 1576 he succeeded in bringing about the "pacification of Ghent," whereby the southern provinces united with the northern, to expel the Spaniards and secure religious liberty. The southern provinces shortly broke away from their allegiance to William, but in 1579, by the Union of Utrecht, the seven northern provinces, Holland, Zealand, Gelderland, Friesland, Utrecht, Groningen and Overyssel, were formed into a league, which two years later formally deposed Philip and declared itself a republic with William as hereditary stadtholder. A price had been set by the king of Spain on William's head, and several unsuccessful attempts were made to assassinate him; a few years later he was shot at Delft.

WILLIAM AND MARY COLLEGE, an institution of higher learning at Williamsburg, Va., next to Harvard the oldest in the United States, having been founded in 1693. It was named in honor of the reigning king and queen of England, and, endowed by the government, soon attained prosperity. It suffered heavily during both the Revolution and the Civil War, and for a period between 1881 and 1888 it was so crippled financially that it had to close its doors. But in 1888 a state appropriation enabled it to reopen, and an indemnity of $64,000, granted it by Congress in 1893, for its losses in the Civil War, put it again on a firm foundation. The college offers two courses, a collegiate and a normal course. It has about 400 students and about fifty instructors. Women were admitted to all college courses for the first time in 1918.

WILLIAMS, JOHN SHARP, (1854–), an American statesman, born at Memphis, Tenn. He studied at the Kentucky Military Institute at Frankfort, the University of the South, the University of Virginia and the University of Heidelberg. He was admitted to the Tennessee bar in 1877, and in the following year removed to Yazoo City, Miss., where he practiced law and also became a planter. Taking an active part in Democratic politics, he was elected to Congress in 1893 and served continuously for sixteen years, becoming the leader of the Democratic party in the House. In 1911 he was elected Senator from Mississippi and was reëlected in 1917.

WILLIAMS, ROGER (1604–1683), a Puritan divine, founder of the colony of Rhode Island, born of Welsh or Cornish parents. He attended the Charter House School and the University of Cambridge. Because of his Puritan beliefs he emigrated in 1631 to New England. There he became pastor of a church at Salem, but his extreme views regarding the jurisdiction of the civil magistrate caused him to be banished from the colony of Massachusetts, and he went with a few companions to Rhode Island and founded a settlement, which he called Providence. Here he formed the first Baptist church in America. He was twice in England, in connection with a charter for the colony, and there he made the acquaintance of Milton and other prominent Puritans. He published *A Key into the Language of the Indians of America, The Bloudy Tenent of Persecution for the Cause of Conscience, The Bloudy Tenent yet more Bloudy* and *George Foxe Digged out of His Burrowes.*

WILLIAMSBURG, VA., the county seat of James City County, forty-eight miles southeast of Richmond, on a peninsula between the James and York rivers and on the Chesapeake and Ohio railroad. The town is one of the oldest in the United States. It was settled in 1632, became the capital of Virginia in 1698, and was the first city

in the state to receive a charter (1722). William and Mary College, the second oldest college in the United States, established here in 1693, is still the chief feature of the city. There are also the Eastern State Hospital for the insane, erected in 1769, and the Williamsburg Female Institute. The courthouse dates from 1769. During the Civil War the first important engagement of the Peninsular campaign took place at Williamsburg. The city is the center of important fish and oyster interests and has manufactories of knit goods, brick and lumber. Population, 1910, 2,714.

WILLIAMS COLLEGE, a nonsectarian school for men at Williamstown, Mass., which developed from a free school established by Colonel Ephraim Williams. The funds donated by the colonel, who was killed in 1755, were invested and not used until 1793, when the school was chartered. The college has a faculty of over fifty members, an average attendance of about 500 and a valuable library containing about 90,000 bound volumes and 17,000 pamphlets. The prosperity and high rank of the institution are largely due to the work and influence of Mark Hopkins, who was its president from 1836 to 1872. Among the well-known men who attended Williams are William Cullen Bryant, President Garfield and his son Harry A. Garfield. The latter has been president of the college since 1908, except for the period of the World War, when he served as fuel administrator.

Williamstown is in Berkshire County, five miles west of North Adams. In 1910 it had a population of 3,708.

WIL'LIAMSPORT, Pa., the county seat of Lycoming County, ninety-five miles northwest of Harrisburg, on the West Branch of the Susquehanna River and on the Pennsylvania, the Philadelphia & Reading and the New York Central railroads. The city is on the Alleghany plateau, in an agricultural, mining and lumbering section. Its industries include numerous lumber mills, clothing factories, steel works, furniture factories and manufactories of rubber goods, motors, gasoline engines, valves, pumps, dyes, wire rope, shoes, silks and sewing machines. Among the prominent buildings are a city hall, a Federal building, the James V. Brown Library, a state armory, two hospitals, a home for the friendless and a Masonic Temple. The Dickinson Seminary is located here. The place was settled in 1779, was incorporated as a borough in 1806, and chartered as a city in 1866. It adopted the commission form of government in 1912. Population, 1910, 31,925; in 1917, 34,123 (Federal estimate).

WILLIMAN'TIC, Conn., one of the county seats of Windham County, sixteen miles northwest of Norwich, at the confluence of the Willimantic and the Natchaug rivers and on the New York, New Haven & Hartford and the Central Vermont railroads. Willimantic is popularly known as the "Thread City," the manufacture of thread being its principal industry. Other manufactures are silk goods, cotton prints and twills, plumbers' supplies, boxes and fine machinery. Most of the factories are run by water power. A state normal school is located at Willimantic, also a state armory. The city has a Federal building and two libraries. It was settled about 1822, was incorporated as a borough in 1833, and was chartered as a city in 1893. Population, 1910, 11,230; in 1917, 12,902 (Federal estimate).

WIL'LIS, Nathaniel Parker (1806–1867), an American author, born at Portland, Maine, educated at Andover and at Yale. During his college days he attracted some attention with his verse, and after graduation was employed by S. G. Goodrich to edit *The Legendary* and *The Token.* The *American Monthly Magazine,* from its establishment to its consolidation with the New York *Mirror,* was under his control. Willis traveled for some years as correspondent of the *Mirror* in France, Italy, Greece, Turkey, Asia Minor and England, and of the famous men whom he met he wrote in *Pencilings by the Way.* Many of these articles caused offense by their personal tone. After his return to America, he conducted several journals, all of which except the *Home Journal* were short-lived. His works include poetry, travels and society sketches, in all of which he displays a facile style, but no great profundity of thought.

WILL'-O'-THE-WISP. See Ignis Fatuus.

WILLOW, *wil'o,* a group of trees and shrubs common in the cold and temperate regions of the northern hemisphere, with a few representatives in Australia and some of the islands of the Southern Pacific. All thrive in moist ground, and are most common

on the banks of streams and ponds and in marshes. The alternate leaves are long, slender and pinnate; these are preceded by flowers in the form of catkins. The catkins, which are clothed with long, glossy hairs, are popularly known as *pussy-willows*. On account of the flexible nature of the shoots of many species and the toughness of their wood and fibers, they have always been used as materials for weaving baskets, hoops and crates. Baseball bats, hoe handles and many similar articles are made from the wood of the white willow, and wooden shoes, pegs and other small objects are constructed from other species. The *weeping willow*, which is a native of China, is a fine ornamental tree that is often planted in parks.

WIL'MINGTON, DEL., the largest city in the state and the county seat of New Castle County, is twenty-seven miles southwest of Philadelphia, on the Delaware River, at the junction of the Christiana and the Brandywine rivers, and on the Baltimore & Ohio, the Philadelphia & Reading and the Philadelphia Baltimore & Washington railroads. The city is picturesquely situated on hilly ground and extends about four miles back from the Delaware river. The falls of the Brandywine afford water power which turns the wheels of numerous iron and steel works, foundries, machine shops and rolling mills. There are large shipbuilding yards, railroad shops and brick yards. A score of leather plants have made Wilmington the center of that industry in the United States. It is the location, also, of immense powder plants and a large paper making industry. The city is an important port of entry, having a foreign trade amounting to about $24,000,000 a year.

Among the educational institutions are the Friends' School, a military academy, the Hebbs School, Goldey College, the Ursuline Academy and two business colleges. The libraries include the public, the law and that of the historical society. Holy Trinity Church, built by the Swedes in 1698, is said to be the oldest church in continuous occupation in the United States. Some of the charitable institutions are the industrial school for girls; the Ferris Industrial School for boys; the Delaware and the Homeopathic hospitals; a home for friendless children; Saint Peter's Orphanage; Saint Joseph's Home; two homes for aged men and women, the state hospital for the insane and the county almshouse. Other prominent buildings are the courthouse, the Federal building, the customhouse and the Auditorium.

Wilmington was first settled by the Swedes under Peter Minuit in 1638. It was taken by the Dutch in 1655, and they in turn were succeeded by the English in 1664. Soon after this the place was brought under the proprietorship of William Penn. The town was laid out about 1731. It was incorporated as a borough in 1739, and was chartered as a city in 1832. Population, 1910, 87,411; in 1917, 95,369.

WILMINGTON, N. C., the county seat of New Hanover County, 148 miles southeast of Raleigh, on the Cape Fear River and on the Seaboard Air Line and the Atlantic Coast Line railroads. It is about thirty miles from the sea, and is an important port of entry for a large foreign and coastwise trade. The principal exports are cotton, rice, turpentine, vegetables, lumber and naval supplies. There are extensive manufactories of lumber and cotton products, dyes, metal goods, hosiery, fertilizers, ice and foundry goods.

Some of the prominent structures of Wilmington are a Federal building, a courthouse, a Masonic Temple and a public library. Important institutions are Cape Fear Academy, a county hospital, United States Marine Hospital, a house of correction and a home for aged women. Wrightswood Beach, a popular summer resort, is located on an island eight miles east.

Wilmington was settled in 1830, and was called New Liverpool and later Newtown. It was incorporated as the town of Wilmington in 1739, and was the capital of the province after 1743. Before the Revolution it was one of the first to resist British authority. During the Civil War the port was one of the most important in the Southern states. Fort Fisher, protecting the harbor, was captured by Federal forces on January 15, 1865, and the town itself was entered by General Terry on February 22. Wilmington was chartered as a city in 1866. It has adopted the commission form of government. Population, 1910, 25,748; in 1917, 30,400.

WIL'MOT PROVISO, *pro vī'zo*, an amendment presented in Congress in 1846 to a bill providing for the purchase of territory from Mexico. It was offered by David Wilmot, a Democrat from Pennsylvania, and provided that "neither slavery nor involuntary servitude shall ever exist in any part of such territory, except for crime whereof the party

shall first be duly convicted." The amendment was adopted in the House, but did not come to a vote in the Senate, and in the next Congress the bill was finally passed without the amendment.

The debate in Congress over the question resulted in a breach between Northern and Southern Democrats, which led to the adoption by that party of the doctrine of popular sovereignty. This in turn resulted in the withdrawal of many Northerners, who joined the Free-Soilers and later became prominent in the Republican party.

David Wilmot (1814–1868), an American politician and jurist, born at Bethany, Pa. He was admitted to the bar in 1834 and began his practice at Towanda. He became a prominent Democrat and served in the House of Representatives from 1845 to 1851. There he opposed the extension of slavery into the territory acquired from Mexico and was the sponsor for the famous Wilmot Proviso. He later joined the Republican party, was an unsuccessful candidate for governor of Pennsylvania in 1857, served in the Senate for two years (1861–1863), and thereafter was judge of the United States court of claims.

WILSON, Augusta Evans (1835–1909), an American novelist, born at Columbus, Ga. In 1868 she married a Mr. Wilson and afterwards lived at Mobile, Ala. Her books are sentimental, but harmless, and make a wide appeal. They have retained a greater popularity over a longer period than the collected works of any other American novelist. The titles are *Inez, A Tale of the Alamo, Beulah, Macaria, Saint Elmo, Vashti, Infelice* and *At the Mercy of Tiberius.*

WILSON, Henry (1812–1875), an American statesman, born in Farmington, N. H. His original name was Jeremiah Jones Colbraith, but he abandoned the name upon reaching manhood. He was first employed on a farm, later he learned the shoemaking trade, earned money to pay for an academic education and finally engaged in the manufacture of shoes at Natick, Mass. In 1840, as the "Natick cobbler," he addressed political meetings, winning wide fame, and in that year he was elected to the Massachusetts legislature. In 1848 he began to edit the Boston *Recorder,* as a Free-Soil organ. In 1855 he was chosen United States Senator, as a Free-Soiler or Know-Nothing, to succeed Edward Everett. His speeches against slavery are among the most important of the period. He served for a short time on the staff of General McClellan in the Civil War. In 1872 he was elected Vice-President, on the ticket with President Grant, but died before completing his term.

WILSON, James (1742–1798), a native of Scotland, an emigrant to the American colonies in 1766, an eminent patriot and a signer of the Declaration of Independence. He became a member of the Colonial and Continental congresses, and also of the Constitutional Convention of 1787. His speech in the Pennsylvania convention later secured the ratification of the Constitution by that state.

WILSON, James (1835–), an American statesman and administrator. He was born at Ayrshire, Scotland, and emigrated to America at the age of seventeen. He attended Iowa College, engaged in farming and later entered the state legislature, of which he became speaker. From 1873 to 1877, and from 1883 to 1885, he was a member of Congress. At different times he was regent of the University of Iowa, director of the Agricultural Experiment Station and Professor of Agriculture at the Iowa Agricultural College. In 1897 he became Secretary of Agriculture, remaining in that post sixteen years, a longer term than any other cabinet member has ever served.

WILSON, John (1785–1854), a Scottish poet and essayist, better known as "Christopher North." He was born at Paisley, Scotland, educated at Glasgow University and at Oxford and on leaving college settled on an estate on Lake Windermere, where he gave himself up to literary work. Wordsworth, Southey and Coleridge were among his acquaintances. His first independent publication was a poem called *The Isle of Palms,* and this was followed by *The City of the Plague,* a second book of poems. When *Blackwood's Magazine* was established, in 1817, Wilson became one of its contributors, and for many years he wrote some of the most notable articles in that periodical. In 1820 he was appointed to the chair of moral philosophy in Edinburgh University, a position which he held for thirty-one years.

Most famous, perhaps, of the writings of Wilson are the *Noctes Ambrosianae,* which abound in graceful humor and sentiment. Among his other works are three novels, *The Lights and Shadows of Scottish Life, The Trials of Margaret Lyndsay* and *The Foresters.*

WILSON, [THOMAS] WOODROW (1856–), an American educator, writer and statesman, the twenty-eighth President of the United States, and the only Democrat to serve two consecutive terms since Andrew Jackson. His administrations are linked with such stupendous changes in domestic and international history, and events and problems of such vast import confronted him almost from his first inauguration, that it is difficult to arrive at a just estimate of his place in history. No man of outstanding importance can be properly judged by his own generation; but, even though there is lacking the necessary perspective of time, it is clear that he ranks with the greatest of American Presidents. A man of deep sympathy for the workers of all nations, he stirred the masses by his remarkable state papers as no other statesman has moved them, and it is not an exaggeration to say that his writings have been read and quoted more widely than those of any other public leader of his time.

It happened that the greater part of his administrations ran parallel with a terrible world struggle in which traditions, laws and organizations centuries old were swept away. Into the tide of war America was drawn, under the leadership of Woodrow Wilson, who had been called pacifist and impractical idealist by those out of sympathy with his methods and policies. Yet it was this peace-loving President who held the nation almost a unit through the anxious days of the war, who brought new inspiration to the war-weary masses in the allied countries, and who broke down the iron discipline of the subjects of the German emperor by his insistence on America's just aims in fighting.

President Wilson's fame as the spokesman of the allies and interpreter of American ideals is unquestioned. Whether the world was ready for the acceptance of his principles and whether the foundations of a lasting peace were laid in the treaty he helped to frame, time alone can tell, but it is certain that he had a decisive part in bringing the war to a close. For this achievement he must remain a great world figure.

Early Life. Both of the grandfathers of Woodrow Wilson were born in the British Isles. His mother's father, Thomas Woodrow, was a Scotch Presbyterian clergyman who at one time preached in a small church in Carlisle, England. Subsequently he went as a missionary to Canada, and eventually held a pastorate in Chillicothe, Ohio. The paternal grandfather, James Wilson, was an Ulsterman of County Down. He emigrated to America in 1807, and became a successful printer and newspaper owner in Pennsylvania. Joseph Ruggles Wilson, the youngest son of James Wilson and the father of the future President, was a well-known educator and a distinguished clergyman of the Presbyterian Church, South. He held several professorships in Southern colleges, and was pastor at various times in three different states. While Dr. Wilson was preaching in Staunton, Va., his third child and first son, Thomas Woodrow, was born, on December 28, 1856. The boy was taught at home until his ninth year, and in 1873, when a lad of seventeen, he entered Davidson College, N. C. Before the end of the first year he left school because of ill health, and when he reëntered college, in 1875, he registered at Princeton.

Woodrow Wilson (the name Thomas he never used) was active in the university debating and literary circles, was managing editor of *The Princetonian* in his senior year, and won other honors as an undergraduate. He was graduated with the class of 1879, entered the law school of the University of Virginia, where he remained a year, and in 1882 began the practice of law in Atlanta, Ga. At college he had been keenly interested in the study of political science, and had read voluminously on the subject. As a young lawyer he found that study was more absorbing than the trying of cases, and in the course of a year he abandoned his practice to become a postgraduate student at Johns Hopkins University. Here he specialized in government and jurisprudence.

Career as Educator. In 1885 Wilson received his doctor's degree, having submitted as his thesis a book that is now a standard classic in its field—*Congressional Government: A Study in American Politics*. It is an interesting fact that the theories which the young man worked out in this small volume were consistently applied by him years later as Governor of New Jersey and as President of the United States. In his thesis he de-

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clared that the method of preserving balance in governmental functions by having the legislative and executive administrations act as a check upon each other was weak in that it did not provide for effective leadership. His idea was that the executive should assume the official leadership and since government by political parties had become a fact, that the President should be not only the leader of the people as a whole, but the head of his own party.

It was many years before Wilson had the opportunity to put these theories to a test. For a quarter of a century after leaving Johns Hopkins he rose steadily to distinction as an educator. From 1885 to 1888 he was associate professor of history and political economy at Bryn Mawr College, and from 1888 to 1890 held a similar position at Wesleyan University, Middletown, Conn. While at Wesleyan he published *The State,* another classic on political science, an analysis of the governments of various nations. This book has been widely used as a text in colleges and universities.

Wilson was offered the professorship of jurisprudence and political economy at Princeton in 1890, and in that year began an association with his alma mater that was to last twenty years. In 1902 he succeeded Dr. Francis L. Patton as president of the university. He had been remarkably successful as a teacher, partly because of his scholarship and grasp of his subject, and partly because of his attractive method of presenting it. His career as head of the institution was no less successful.

Among the several reforms inaugurated by Wilson as head of the university, the most radical was the introduction of the preceptorial system. About fifty preceptors were added to the faculty for the purpose of bringing about a closer relationship between the students and the teaching force. New professors distinguished in special fields were also brought to the institution, the equipment was enlarged and improved, and large endowments for the graduate school were secured. One attempted reform of the president met with opposition that defeated it—the plan of doing away with the exclusive senior-junior clubs in the interest of greater democracy in university life. On the whole, however, Wilson's record was sufficiently brilliant to make him a prospective nominee for governor in 1910.

In Politics. New Jersey was a Republican state, and the president of Princeton was a Democrat, but a long period of "boss" government had created a popular demand for a higher type of official, and when the Democratic convention nominated Wilson the liberal elements of all parties could approve the choice. The Democratic candidate set a new standard of campaigning, for he presented a progressive, straightforward platform and refrained from abusive personalities. Elected by a plurality of 49,056, in a state that had been Republican for sixteen preceding years, he carried out his program as he had outlined it.

As governor he showed exceptional qualities of leadership, guiding through the state legislature a number of measures designed to remedy various political and economic evils. When he met with "machine" opposition he did not hesitate to appeal to the people over the heads of the politicians, and in 1911, by a speaking tour through the state, he defeated the efforts of the machine to override the primary vote for James E. Martine, candidate for United States Senator. A record like this naturally made him a national figure in politics, and people began to study his career.

As the Presidential campaign of 1912 drew near the progressive governor of New Jersey was prominently mentioned as a candidate, and in the Democratic national convention which met at Baltimore, Md., he was nominated after a somewhat protracted contest. His chief opponent, Champ Clark of Missouri, had the backing of the conservative elements, but the fight for Wilson's nomination was led by William Jennings Bryan, still a powerful leader, though three times defeated for the Presidency. Public opinion veered strongly in favor of the New Jersey candidate in the closing hours of the convention, and his nomination was accepted with hearty approval by the rank and file of the party. The Republicans had split into two camps, which made the election of Wilson almost a foregone conclusion. His campaign, however, strengthened the favorable impression he had made, especially as he refused to be drawn into personal arguments. With Thomas R. Marshall of Indiana as his running mate, he carried forty states and received 435 electoral votes. The popular vote stood 6,286,214 for Wilson; 4,126,020 for Roosevelt; 3,383,922 for Taft.

As President. During the administration of President Taft, Wilson's immediate predecessor, popular feeling had run high against the Republicans because of their refusal to "revise the tariff downward." In the Congressional elections of 1910 the Democrats had gained control of the House, and through the Republican split of 1912 they secured a working majority in the Senate, besides increasing their strength in the lower body. The President therefore began his administration with a congress composed largely of his own political faith. His legislative program, among other things, called for a new tariff law, a revision of the banking laws and stricter regulation of private monopolies. The tariff was first disposed of.

Congress (the Sixty-third) was called in special session on April 7, 1913, primarily for the purpose of framing a new tariff law. President Wilson excited much comment by appearing personally before the assembly and reading his message himself, a practice which had been abandoned after the administration of John Adams. Representative Underwood of Alabama and Senator Simmons of North Carolina had charge of the framing of the bill, which, after weeks of debate, was signed on October 3 by the President, who more than once was forced to exert pressure to push it through. The bill brought about a general reduction of duties on a long list of commodities.

Meanwhile, during the debate on the tariff, important preliminary work was being done on the revision of the banking laws, and when the tariff was out of the way Congress took up the debate of the Glass-Owen, or Federal Reserve Act. The foundation for this legislation had been laid by the Monetary Commission created in 1908. The act was passed in December by the regular session of Congress, and received the President's signature on December 23 (1913). It was in some respects one of the most important pieces of domestic legislation enacted since the Civil War, and its passage reflected favorably on the President's powers of leadership and his broad statesmanship.

After the midwinter recess Congress reassembled on January 20, 1914, and heard the President's message on anti-trust legislation. Two important laws followed—the Clayton Anti-Trust and the Trade Commission acts. By the former, interlocking directorates were made illegal; the latter created a commission with powers over corporations similar to those exercised over the railroads by the Interstate Commerce Commission. Another important piece of legislation was the repeal of the act exempting American coastwise shipping from paying tolls at the Panama Canal. The President used his influence in favor of this repeal because he held that the act violated American treaty agreements with Great Britain. Meanwhile vexatious international questions were beginning to confront him.

Trouble with Mexico. Shortly before President Taft went out of office, Madero, the deposed President of Mexico, was murdered, presumably by the orders of Huerta, who had led a revolution against him. Taft had refused to recognize the Huerta régime, and this policy was maintained by Wilson, who, in a special message to Congress in December, 1913, declared that stability in Mexico was dependent upon the downfall of Huerta. It was the general policy of the Wilson administration to discourage revolutions in the Latin-American republics by refusing recognition to usurpers. The Mexican problem, however, seemed to offer no solution. Some Americans favored active intervention to protect American lives and property in the troubled country, and these bitterly criticized the President for maintaining a policy of watchful waiting. Wilson, who fully realized the consequences of sending an army to "clean up" the country, and the adverse effect it would have on South American republics, too often suspicious of American motives, refused to do more than lift the embargo on the shipment of arms into Mexico, where a counter-revolution against Huerta was being carried on by Carranza and Villa. Circumstances, however, forced his hand.

In April, 1914, several American marines were arrested at Tampico by Mexican officers. Rear-Admiral Mayo, the American commander, demanded that the Americans be released and that Huerta formally apologize and order a salute to the American flag. Complications arose over Huerta's refusal to salute the flag, and the President on April 20 asked and received from Congress authority to use the naval and military forces of the United States to enforce the demand. Vera Cruz was occupied by American forces, but open hostilities were averted by an offer of mediation on the part of Argentina, Brazil and Chile (the "A B C" powers of South Amer-

ica). While an arbitration commission was in session at Niagara Falls, the situation was cleared by the resignation of Huerta.

After an interval Carranza succeeded in setting up a provisional government, which President Wilson formally recognized on October 19, 1915. Meanwhile, the World War in Europe had broken out (August, 1914), and Villa, who had quarreled with Carranza, was increasing the state of disorder by bandit raids against Mexicans and Americans alike. Matters came to a climax in March, 1916, when the town of Columbus, N. M., was raided at night by about 1,500 Villistas. Property was destroyed and several Americans were killed, the news of which made the people of the United States hot with indignation.

President Wilson called out the militia to guard the border, and an expedition under Pershing advanced into Mexico for the ostensible purpose of getting Villa, "dead or alive." Carranza maintained a hostile attitude toward the enterprise, and the utmost caution was preserved by the Americans to prevent a clash between the two governments. The public, many months later, learned that German intrigue was responsible for much of Villa's activity, and the wisdom of the administration's course was vindicated. In February, 1917, the expedition returned home, where a greater crisis was to be met.

America and the War in Europe. When the great war broke out in 1914 the majority of Americans breathed a sigh of relief that three thousand miles of water lay between them and the scene of struggle, and the President's proclamation of neutrality was generally accepted with approval. But neutrality was a most difficult thing to maintain. The great majority of American citizens of German blood found themselves openly sympathetic with Germany, and began to resent the shipment of supplies to the allied nations, because allied control of the seas made like shipments to Germany impossible.

On the other hand, large numbers of Americans who had no ties overseas began to feel stirrings against Germany. The invasion of Belgium was something that could not be talked away, and as the war progressed and appeals for help came from the areas devastated by German forces this hostile feeling deepened. When the liner *Lusitania* was sunk by a submarine, in May of 1915, and the people read that over one hundred American lives were lost, there was open talk of joining the allies. The President, however, refused to be moved by the extremists on either side. Instead of suggesting war he bent his energies toward forcing Germany to keep its submarine warfare within the rules of international law and humanity, and he would not yield to the German and pacifist propaganda for an embargo on supplies to the allies, as he rightly held that such a course would be a violation of American neutrality.

The Campaign of 1916. In the summer of 1916 President Wilson and Vice-President Marshall were unanimously nominated to succeed themselves by the Democratic convention which met at Saint Louis. The Republicans nominated Charles Evans Hughes and Charles W. Fairbanks. The campaign lacked the dramatic elements of the fight of 1912. The Democrats asked for Wilson's reëlection because of his record for constructive legislation, and his tactful handling of the international problems, which had "kept the country out of war." The Republicans vigorously attacked the domestic and foreign policies of the administration, but they failed to convince the country that a Republican régime would do any better.

President Wilson's personality had made a tremendous impression. He was criticized by his enemies as being vacillating and inconsistent, but there was a widespread feeling among the people that the man who occupied the executive chair had always acted from high motives, had never permitted dictation to him, and could be trusted further ith the affairs of the nation. The contest was close. Though Wilson increased his popular vote over that of 1912 by nearly 3,000,000, he won by an electoral vote of 277, only twenty-three more than Hughes received. The outcome was not definitely known for several days after the election. The Democrats made heavy inroads in normally Republican states, especially in the West.

The Nation at War. Toward the close of 1916 President Wilson published a note requesting that the warring countries of Europe state the precise objects for which they were fighting. To this suggestion both groups of belligerents responded, the allied reply being by far the more specific. With the allied and German replies as a basis, the President addressed the Senate on January 22, 1917. He told his auditors that the United States

would be forced to play a part in the establishment of a durable peace, and that such a peace would be based on "equality of right among great and small nations" and upon "the freeing of subject people." Many people thought that the President was paving the way for an offer to mediate between the two groups of belligerents, but all hopes for peace were abandoned when the German government announced, late in January, that unrestricted submarine warfare would be started on February 1.

This announcement meant that the President's efforts to keep peace by diplomacy had failed. Unhesitatingly he broke off relations with Germany, and on April 6, 1917, signed the Congressional resolution that made the United States an associate with the allies in the great World War. (Details on the events leading up to this resolution and an account of the part America played in the war, both at home and abroad, will be found under the headings UNITED STATES and WORLD WAR.)

The unanimity with which the American people rallied to the support of the administration in this crisis surprised the most optimistic. President Wilson's qualities of leadership never appeared to better advantage than during the nation's participation in the war. He had the confidence of the people as a whole, regardless of party, and his war utterances, magnificent in spirit and couched in inspiring language, stirred America to a high plane of patriotism and devotion. His message caught the ear of the masses in Europe, weary and heartsick over the cruel prolongation of the war, and gave them new courage. Germany listened, too.

During the period of negotiations in the fall of 1918, when Austria and Germany were making proposals for peace, President Wilson was the spokesman for the allies, and at the time the armistice was signed, on November 11, he was probably the most talked-of statesman in the world. It is a remarkable fact, however, that a week before this supreme climax of the war, the American people had elected a new Congress in which the Democrats had been repudiated and Republicans were in the majority, and had voted thus in spite of a direct appeal from the President to send Democrats to Congress.

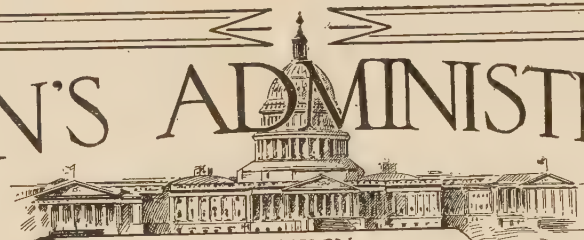
This appeal was widely misunderstood, and it had subjected Wilson to bitter attacks from his political opponents. It was wholly in keeping with his theory of the function of the executive, which anyone may read in his thesis on *Congressional Government*. He conceives the executive as having a dual rôle—that of President of the United States and also head of the party he represents. Leadership should be exercised by the President, who must interpret the wishes of the people and be responsible to them. Efficiency is possible only when the President is backed by a congress in which his own party is dominant. Naturally, to the average voter the appeal was only an act of partisanship, and it cost the President something in prestige. The Congress which was to work with him for the rest of his term was Republican by a margin of two in the Senate and of forty-three in the House.

America and World Peace. With his usual disregard for precedent, the President announced that he would head the American delegation to the peace conference. In December he sailed for Europe, and so for the first time in American history a President visited a foreign nation during his term of office. Like many other acts, this one was greeted with storms of approval and of disapproval, but through it all the President went on his way, undisturbed by popular clamor. The other American delegates were Secretary of State Lansing, Henry White, diplomat, General Tasker H. Bliss, and Edward M. House, confidential adviser of the President.

With the exception of a brief interval late in February, when he returned home to sign bills passed by Congress, the President remained in Europe until the last of June. On his first trip he visited Italy and England, receiving there and in France extraordinary ovations from the people. He took a conspicuous part in the Paris discussions leading up to the treaty with Germany, signed the treaty on June 28 in the Hall of Mirrors, in the Palace of Versailles, and reached home early in July. The treaty was presented to the Senate on July 10, the President at that time addressing the Senators on the subject of the league of nations, which had been made an integral part of the treaty.

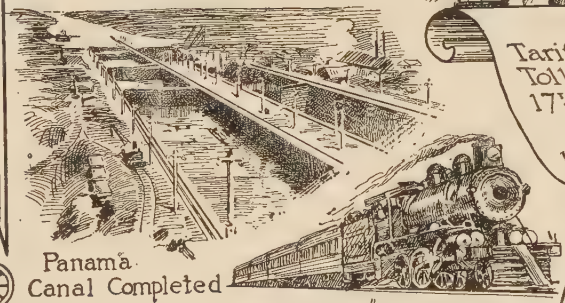
During the President's absence formidable opposition in the Senate had developed to the provisions of the league of nations as formulated in Paris. It was argued that the independence of the United States was jeopardized, that the right of Congress alone to declare war was imperiled, that the United

1913 WILSON'S ADMINISTRATION 1921



LEGISLATION

Tariff
Currency Bill
Tolls Exemption Repeal
17th Amendment Adopted
Income Tax
18th Amendment Adopted



Panama Canal Completed

"Doughboys" in France

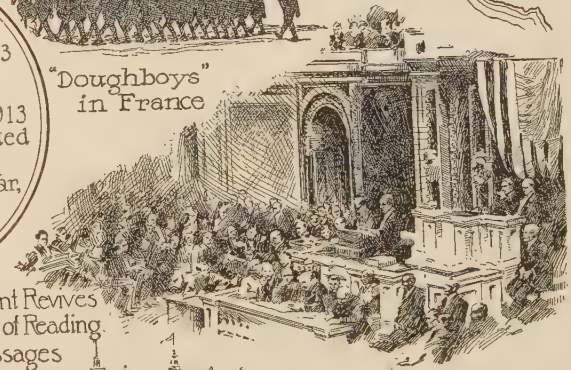
Railroads Taken by the Government

Federal Reserve Districts
see article
Banks and Banking

OTHER EVENTS

California Japanese Land Bill - 1913
Floods in Ohio Valley - 1913
Hetch-Hetchy Reservoir Act - 1913
Keokuk Dam Completed - 1913
Cape Cod Canal Completed 1914
Beginning of World War, 1914
U.S. Enters War, 1917

Full or Presidential Suffrage Given to Women in — Illinois, Montana, Nevada, New York, Nebraska, N. Dakota, Arkansas, Oklahoma, Texas, S. Dakota, Michigan, Maine, Vermont, Minnesota, Iowa, Missouri, Indiana, Tennessee



President Revives Custom of Reading Messages

Panama-Pacific Exposition

States would be drawn into petty European quarrels, that the Monroe Doctrine was menaced, etc. A small group of Senators worked against any league whatsoever. A few administration spokesmen asked for unconditioned acceptance of the treaty and league. Many Republican Senators argued for accepting the league with reservations or amendments protecting the Monroe Doctrine and America's sovereignty, and granting the right of America to withdraw at any time from the league. It was intimated by some of the President's friends that he might be forced to run for a third term should the Senate refuse to ratify the league covenant. Wilson himself decided to tour the country to present the case directly to the people, in the hope of getting public opinion to bear pressure on the Senators. He began the tour in September, but before its conclusion the President became seriously ill.

Other Events. International affairs had so prominent a place in the Wilson administrations that they obscured many events of domestic interest. Two amendments to the Constitution became effective, the XVIIth (1913), providing for the direct election of Senators, and the XVIIIth, making illegal the sale and manufacture of alcoholic liquor. The XIXth amendment, enfranchising women, was adopted by Congress in 1919 and submitted to the state legislatures for ratification; by September, sixteen states had ratified it. On July 1, 1919, the United States became temporarily a "dry" nation, in accordance with the terms of a war measure designed to conserve foodstuffs. The prohibition era was scheduled to last until the army was declared demobilized, the prohibition amendment not becoming effective until January 16, 1920.

Several other experiments were tried by the nation in this remarkable period of change. The government took control of the railroads, the telephone and telegraph systems and the cables, and operated them for varying intervals. Because of unsettled conditions it was difficult to judge adequately of the advisability of permanent government ownership. Another innovation was the establishment of daylight saving by moving all the clocks forward one hour on the last Saturday in March and returning to standard time in October. The plan was adopted in March, 1918; it resulted in a great saving of fuel and was considered a boon by city dwellers, who enjoyed thereby an extra hour of light at the close of day. Farmers opposed the system and an attempt was made to repeal the law during the special session of the Sixty-sixth congress. President Wilson vetoed the bill for the repeal; at that time there were not sufficient votes to override his veto, but repeal was accomplished in August.

Except for a few months after the outbreak of the World War, the United States enjoyed great prosperity during the Wilson administration. Business flourished, crops were large, and the Federal Reserve system kept financial conditions steady. To offset these favorable items were the high cost of living and unsettled labor conditions. Wages were high everywhere, but prices were correspondingly higher, and strikes for increases to meet advanced costs became alarmingly frequent during and after the war. The activity of radical elements who admired the Lenine régime in Russia also caused anxiety. Altogether, President Wilson was confronted by larger and more varied problems during his two terms than any other President since Lincoln. An event which caused general sorrow was the sudden death of Theodore Roosevelt, in January, 1919.

The White House Family. President Wilson was twice married. He and his first wife, Ellen Louise Axsen, of Savannah, Ga., were married in June, 1885, at the close of his student days at Johns Hopkins. She died on August 6, 1914, a few days after the World War began. The second Mrs. Wilson, who had been Mrs. Edith Bolling Galt, became mistress of the White House on December 18, 1915. Mrs. Wilson accompanied her distinguished husband to Europe in 1919. The three daughters of President Wilson created much quiet interest among Americans. The eldest, Miss Margaret, is a singer of note, and is active in social welfare work. During the war she sang for the soldiers in a number of communities in Europe. Jessie and Eleanor Wilson were both White House brides, the former marrying Francis B. Sayre, and the latter William G. McAdoo, former Secretary of the Treasury.

Woodrow Wilson, Author. For distinction of scholarship and charm of style Wilson's writings have a high place, though they do not show great variety as to subject matter. His *Congressional Government* and *The State* have already been mentioned. In 1893

Administration of Woodrow Wilson, 1913-1921

I. The President
- (1) Ancestry
- (2) Birth
- (3) Education
- (4) Career as educator
- (5) Governor and President
- (6) Character
- (7) Writings

II. Government Affairs
- (1) Domestic
  - (a) Underwood Tariff Law
    - (1) Revised tariff downward
    - (2) Income tax provisions
  - (b) Federal Reserve Act
    - (1) Twelve Federal Reserve banks created
    - (2) Stabilized financial conditions
  - (c) Clayton Anti-Trust Act
  - (d) Trade Commission Act
  - (e) Repeal of Panama Tolls clause
  - (f) Seventeenth Amendment
    - (1) Direct election of Senators
    - (2) In force, 1913
  - (g) Eighteenth Amendment
    - (1) Prohibition of liquor manufacture and sale
    - (2) Effective January 16, 1920
  - (h) Nineteenth Amendment
    - (1) Women enfranchised
    - (2) Adopted by Congress in 1919
  - (i) Daylight saving adopted
- (2) Foreign
  - (a) Mexico problem
    - (1) Refusal to recognize Huerta
    - (2) Tampico episode
      - (a) Occupation of Vera Cruz
      - (b) "ABC" mediators
    - (3) Villa raid on Columbus, N. M.
      - (a) Invasion by Pershing's troops
      - (b) Withdrawal of troops
  - (b) World War
    - (1) Neutrality maintained until 1917
    - (2) German aggressions against America
    - (3) Diplomacy of President
    - (4) Reëlection of Wilson in 1916
  - (c) United States enters the war, April 6, 1917
    - (1) Conscription
    - (2) Army in France
    - (3) Liberty Loans successfully floated
    - (4) Government operation of railroads
    - (5) Armistice, November 11, 1918
  - (d) Peace Negotiations
    - (1) President goes to Paris
    - (2) Treaty presented to Senate
    - (3) Controversy over league of nations

III. Miscellaneous Events
- (1) Completion of Panama Canal
- (2) Panama-Pacific Exposition
- (3) "War-time" prohibition effective July 1, 1919
- (4) Death of Theodore Roosevelt

Questions on Woodrow Wilson

Who were Woodrow Wilson's grandfathers?

Sketch his career as educator.

Why did he not continue the practice of law?

What was there unusual about his election as governor of New Jersey?

What precedents did Wilson ignore while President?

What amendments were proposed or became effective in his administrations?

In what ways was the Wilson era a period of change?

How long did he remain in Europe?

he published *Division and Reunion,* an account of American history from 1829 to 1889; the same year he brought out *An Old Master and Other Political Essays* and *Mere Literature and Other Essays.* His *History of the American People,* in five volumes, was published in 1902, and is one of the most readable narratives of its kind. Of more recent date are *The New Freedom, Guarantees of Peace and International Ideals.* The eloquent war messages of Woodrow Wilson are familiar to contemporary readers. Undoubtedly some of them will have a place in American literary annals with the utterances of Webster and Lincoln.

Related Articles. Consult the following titles for additional information:
Banks and Banking
Lusitania
Mexico (history)
Nations, League of
Prohibition
Tariff
Woman Suffrage
World War

WILLIAM L. WILSON

WILSON, WILLIAM LYNE (1843–1900), an American statesman and educator, born in Jefferson County, Va. He was graduated from Columbian College, Washington, D. C., studied at the University of Virginia and served in the Confederate army. Later he became professor of Latin at Columbian College and practiced law from 1871 to 1882, when he was chosen president of the University of West Virginia. In 1883 he entered Congress as a Democrat and served twelve years. As chairman of the Ways and Means Committee, he led the opposition to the Sherman silver purchase law and was the author of the famous Wilson Tariff Bill (see TARIFF). In 1895 he was made Postmaster-General by President Cleveland, and at the close of his term became president of Washington and Lee University.

WINCHELL, ALEXANDER (1824–1891), one of America's greatest geologists, who produced more than twenty volumes on geological topics and who taught for many years. He was born in Dutchess County, N. Y., and was graduated in Wesleyan University in 1847. Immediately he was appointed to the chair of physics and civil engineering at the University of Michigan, but was soon transferred to the geological department. He was a founder of the Geological Society.

WIND, movements of the atmosphere caused by unequal heating and the resultant inequality of pressure on different parts of earth's surface. The temperature is highest and the atmospheric pressure is lightest at the equator, while at the poles the temperature is lowest and the air most dense.

The heating of the air at the equator produces an upward current, which continues until the rising air reaches layers of atmosphere of the same density, when the vertical motion is changed to a horizontal one, and currents set in toward the poles. As the warm air over the equator rises, the cool air on either side moves in to take its place, so that there are in the equatorial regions two sets of currents, blowing towards the equator, and an upper current blowing towards the poles. When the upper current reaches the temperate latitudes it becomes of the same density as the air near the surface and descends, mingling with the surface currents. For this reason there may exist areas where for many consecutive days there is no wind.

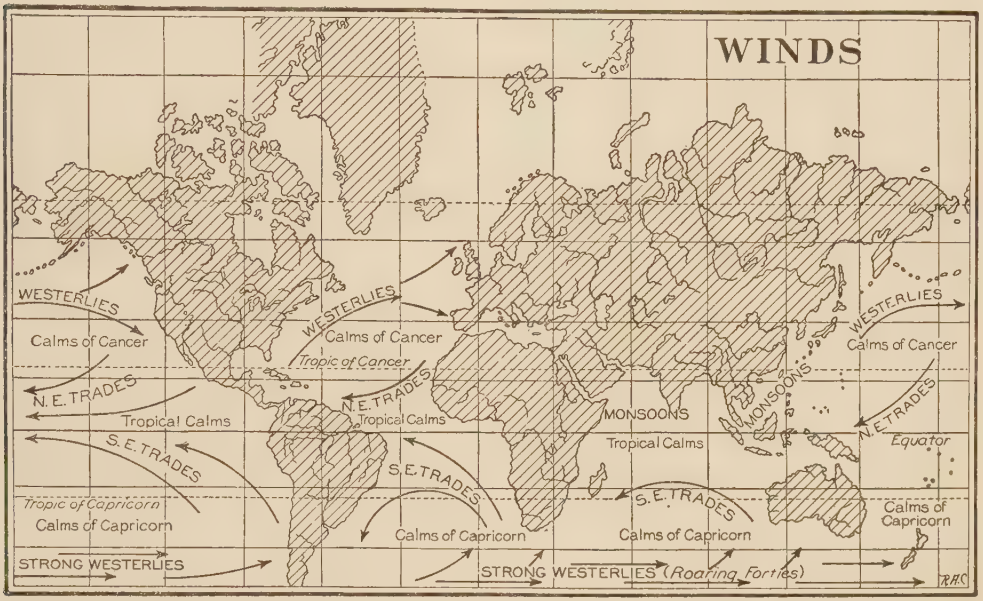
Were it not for the rotation of the earth, these currents would blow directly north and south. As it is, each is deflected from its course. The wind blowing toward the equator enters regions having a greater velocity of rotation than those from which it came. It is unable at once to acquire this velocity and, as it were, lags behind, producing easterly winds.

Winds blowing toward the poles are constantly entering regions having a lower velocity of rotation, and their eastward motion is greater than that of the land; hence they become westerly winds. In the northern hemisphere they blow from the southwest, and in the southern hemisphere, from the northwest.

In and near the tropics, these currents are quite regular, but as they approach the temperate latitudes and become nearer equal in temperature and pressure, they are subject to many local influences and become very irregular; hence no theory of wind which accounts for the general circulation of the atmosphere is sufficient to explain the prevailing winds in many localities, and the ac-

counting for these is one of the most difficult problems with which the meteorologist has to contend.

A wind is named from the direction from which it blows; an easterly wind blows from the east, a westerly blows from the west. The force of the wind depends upon its velocity, which is determined by the anemometer, an instrument constructed of four hemispherical cups at the ends of horizontal bars, mounted on a vertical axis and attached to a registering system of clock work.



Related Articles. Consult the following titles for additional information:

Calms, Regions of	Sirocco
Cyclone	Storms
Khamsin	Tornado
Land and Sea Breezes	Trade Winds
Monsoon	Typhoon
Norther	Weather Bureau
Prevailing Westerlies	Whirlwind
Simoom	

WINDERMERE, *win'dur meer,* the largest lake of England, situated in Westmoreland and Lancashire counties, in the northwestern part of the country. It is ten and one-half miles long and about a mile wide. It contains seven islands, and has steep and rugged shores. The beauty of its scenery inspired Southey, Wordsworth and Coleridge.

WINDHOVER, *wind' huv ur.* See KESTREL.

WIND'LASS, a mechanical device for raising weights with little power. The windlass is a modification of the wheel and axle, and in its simplest form it consists of a mounted cylinder, several inches in diameter, with a square hole at each end, into which bars, called handspikes, can be inserted for turning it. As the roller is turned, it winds a rope or chain, which raises the weight. The windlass used for raising buckets of water from a well has a winch at one or both ends of the roller. The lifting power of a windlass may be greatly increased by fitting a cog wheel between the cylinder and the winch. See DERRICK.

WIND'MILL, a mechanical device which utilizes the energy of the wind for pumping water from wells, for grinding grain, cutting fodder for stock, for running churns, and many other purposes where a small amount of power is needed. The mill in general use on American farms has a wind wheel with radiating wooden or metal slats, placed close together and inclined, though not overlapping. This wheel rotates on a horizontal bar having at its opposite end a vane which keeps the wheel constantly facing the wind. The wheel is mounted on a frame twenty-five or more feet in height, to expose it to the wind's action. The speed of the mill is regulated by a gearing. The amount of power varies with the machine. There are mills which, under favorable conditions, furnish as high as four or five horse power. This type of mill is a distinct improvement upon the old-fashioned Dutch windmill, which has four radial arms covered with canvas. The latter is mounted

on a tower on wheels and is turned by hand when a change in direction of the wind makes it necessary to set the sails to the breeze.

WIN'DOW, an opening in the wall of a building, to admit light and air into the interior. In dwelling houses in ancient times the windows were narrow slits, and it was not until about the end of the twelfth century that glass was generally used in private houses in England. In Egypt windows were in common use in domestic and military architecture, but rare in the religious edifices. In Greece they were in use from ancient times, most of them being simple rectangular openings. Amongst the Romans, windows were very common, both in their private dwellings and in their temples. There was a great variety of form and decoration, and glass and transparent stones were used.

The window reached its highest development in the Gothic architecture, where it constitutes a distinguishing and characteristic feature. In this style, large pointed and circular windows were used, decorated with tracery and filled with beautiful stained glass, representing various designs, so as to rival wall paintings. This art of stained glass prevailed in France most extensively and also in England and Germany in the Middle Ages, but declined after the fifteenth century. It has been revived in the United States by the use of methods which enable the artist to excel even the finest effects of the Middle Ages.

In modern houses, windows are generally closed with clear glass, set in a frame, or *sash,* usually of wood or metal. They are often decorative, stained glass being used, and are made in nearly all styles. See STAINED GLASS.

WIND'PIPE. See TRACHEA.

WINDSOR, *win'zur,* ONT., in Essex County, on the Detroit River, directly opposite Detroit, and on the Canadian Pacific, the Michigan Central, the Grand Trunk, the Wabash, and the Pere Marquette railroads. It is connected by ferry with Detroit and is the location of the Canadian branches of many large United States manufacturers. It is one of the principal centers in Canada for the manufacture of automobiles and drugs, and also has large steel mills, basket factories, and a salt refinery that is one of the largest in the Dominion. Windsor was first settled in 1812. Population, 1911, 17,829; in 1915, estimated, 25,000.

WINDSOR CASTLE, one of the most magnificent royal palaces in the world, situated at Windsor on the Thames, about twenty miles from London. Windsor was the residence of the Saxon kings before the Conquest.

William the Conqueror first built a royal residence there, and succeeding rulers have added to, torn down and rebuilt it. The present structure was completed in the reign of George IV. The castle consists of buildings surrounding two great courts, between which is the round tower, or keep, the oldest part of the structure, built by Edward III. Saint George's chapel, an imposing part of the castle is a fine example of Gothic flamboyant architecture. It has a vault, in which are buried many members of the royal family, among whom are Henry VI, Edward IV, Henry VIII, Jane Seymour, Charles I and George IV. Adjoining this is the Albert Chapel, one of the most beautiful memorial buildings in the world, built by Henry VII as a mausoleum. Under James II it was used as a Roman Catholic chapel, and after this it was neglected until George III rebuilt it as a royal tomb.

It was Queen Victoria who finished it in the most sumptuous manner, as a memorial to her husband, Prince Albert. Besides the private rooms of the royal family, there are in the castle richly furnished state apartments, containing many art treasures.

WIND'WARD ISLANDS, a group of islands of the West Indies embracing Saint Lucia, Grenada, Saint Vincent and a chain of smaller islands, all under a British governor-in-chief. The islands are so called because they are exposed on their eastern sides to the trade winds. See LEEWARD ISLANDS.

WINE, the fermented juice of fruits, particularly of grapes. The grape sugar contained in grape juice is readily changed through fermentation into alcohol. The process of manufacture is simple. To separate the juice the grapes are placed in a crushing machine having two corrugated cylinders which crush the grapes without crushing the seeds. The *must,* as the resulting mass of pulp is called, is then forced by pumps through hose to large wooden vats or tanks, where the fermentation takes place.

The fermentation is watched with the greatest care, for upon it depends the quality of the wine. It is hastened by raising the temperature or by placing in the must a small

quantity of fermented pulp from another vat. When the fermentation is completed, the juice is strained from the pulp and placed in large reservoirs, called *tuns,* where it remains until the wine is ripe. It is then drawn into casks or bottles and is ready for market.

Wines are known as *dry* when complete fermentation takes place and all the sugar is converted into alcohol. When fermentation is arrested while there is yet some sugar, the result is a sweet or fruity wine. A sparkling wine is one which effervesces when the bottles are uncorked. Champagne is a good illustration. In such wines fermentation has been arrested before all the carbonic acid has escaped. In color, wines are known as *red* or *white.* Red wines are produced by allowing the skins of the grapes to remain in the vat during fermentation. The amount of alcohol in wine varies from 16 to 25 parts in 100. In light wines it may be from 7 to 12 parts in 100.

Wines are manufactured in almost endless variety, and many of them are named from the locality in which they are made, such as Port, Burgundy, Bordellais and Rhenish wines. The leading countries in the world in the manufacture of wine are France, Spain and Italy. In the United States wine has been extensively manufactured in California. The national prohibition amendment (1920) dealt the industry a heavy blow.

Related Articles. Consult the following titles for additional information:

Champagne
Grape
Port Wine
Sherry

WINGED BULL, a type figure of ancient Assyrian sculpture. It was customary to place winged bulls with human heads before the entrances of royal palaces, as it was believed they guarded the buildings from enemies. Some of the larger bulls were seventeen feet high. The wings of the creatures were carved on huge plinths that covered the wall, while the body projected from the wall, the head and breast being outside the arch of the entrance.

WINGED LION, a famous piece of bronze sculpture representing a lion with wings. It is the emblem of Saint Mark, and was cast in 1178 for the embellishment of one of the two large columns at the south end of the extension to Saint Mark's Square, Venice.

WINGED VICTORY, or **NI'KE OF SAM'OTHRACE,** a famous piece of antique sculpture, dug up in 1862 on the island of Samothrace, in the Aegean Sea, and now in the Louvre, Paris. Nike, the Greek goddess of victory and winged messenger of Zeus and Athene, is here represented as standing on the prow of a ship, her transparent draperies whipped by the breeze. The statue, it is believed, was made to commemorate some military victory of the Greeks. It is badly mutilated, but what remains of it is treasured for its buoyant vitality, its sinuous grace and the noble dignity of its poise. See SCULPTURE.

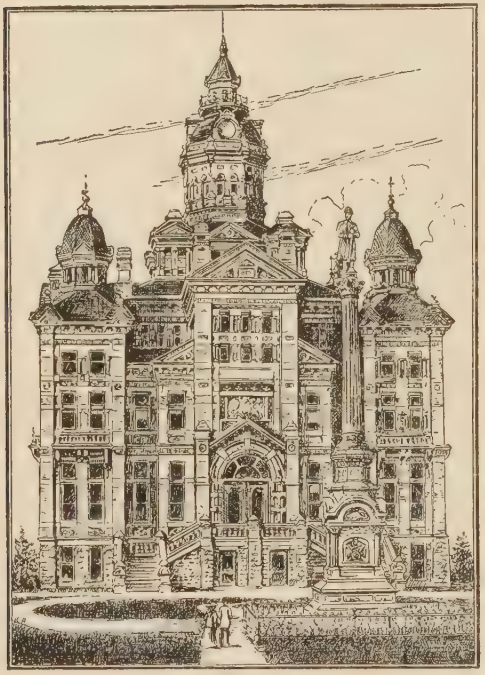
WINKELRIED, *vin'kel reet,* ARNOLD, a Swiss patriot, who, if legend be true, brought about the independence of Switzerland. According to the popular story, at the Battle of Sempach, when the Swiss were fighting for liberty against their Austrian oppressors, Winkelried, who was only a poor peasant, conceived the idea of leading his countrymen in close triangular formation. By deliberately sacrificing their lives they drove a wedge into the enemy and thus made a breach which opened the way for a successful attack and victory.

WINNEBA'GO, an important Siouan tribe, now numbering about 2,000, who live in Wisconsin and Northeastern Nebraska. When the Jesuits met the Winnebagos, they held a broad tract in Central Wisconsin, near Green Bay and Lake Winnebago. They were a tractable people, but many of them died from the ravages of smallpox, and their numbers greatly diminished.

WINNIPEG, LAKE, a lake situated in the south-central part of Manitoba. It has an area of 9,459 square miles, and is a little larger than the state of Vermont. The southern half is in the form of a narrow arm, which extends southward to within about thirty miles of the city of Winnipeg. Its entire length is 260 miles, its greatest width about sixty miles and its greatest depth 100 feet. It receives the Winnipeg, the Red River of the North and the Assiniboine on the south, and the Saskatchewan on the west. Its outlet is by the Nelson River, which, after flowing through several small lakes, reaches Hudson Bay. The fisheries are the most important in Manitoba, yielding $400,000 annually.

WIN'NIPEG, MANITOBA, the capital of the province, the county town of Selkirk County and the third largest city of the dominion, is situated at the confluence of the Assiniboine and Red Rivers. It is about 100 miles north

of the United States boundary and practically midway between Montreal and Vancouver. Its geographic position is unique; it lies in a great plain, midway between Lake Winnipeg and the international boundary, and is thus like a spout through which all the trade between eastern and western Canada must flow. It is entered by the Canadian Pacific, the Canadian Northern and the Grand Trunk Pacific railways, and their repair shops are among the largest industries of



WINNIPEG CITY HALL

the city. The Great Northern and Northern Pacific lines give the city direct communication with Minneapolis and Saint Paul and other important commercial centers in the United States.

Winnipeg is a great wholesale center, and its manufactures are increasing in importance. It has over 500 factories, whose total annual output exceeds $100,000,000. The wholesale trade in normal times averages $200,000,000 a year. It has about 200 churches and missions, excellent public and parochial schools, and a number of colleges, including the University of Manitoba, Saint John's College, Wesley College, Manitoba College and Manitoba Medical College. The city is well built, with wide, regular streets and many beautiful buildings, among which are the city hall, the postoffice, the parliament buildings, the courthouse, Carnegie Library, the new Fort Garry Hotel, Eaton's department store, two great railroad stations and the Hudson's Bay Company, McArthur, Sterling Bank and Ideal buildings.

The site of Winnipeg, in a rich river valley, early attracted settlers. The Hudson's Bay Company in 1812 erected Fort Douglas, which protected the colonists sent out by the Earl of Selkirk; these colonists were the first real settlers in Manitoba. Fort Garry, built in 1822 and rebuilt in 1835, was for years the seat of government in the Red River Valley. In 1873 the city of Winnipeg was incorporated. Its growth has been rapid, and it has enjoyed great prosperity.

In 1918 the most serious strike in its history occurred. Practically all of the union men stopped work, and for several weeks the situation was grave. The city government called for citizen volunteers to act as policemen, and they carried on public activities until the strike was broken. In 1870 the city had 215 inhabitants; in 1901 the population was 42,340; in 1911 it was 136,035, and in 1918, 183,595.

WINNIPEGO'SIS, Lake, a lake in the southwestern part of the Canadian province of Manitoba, lying west of Lake Winnipeg and northwest of Lake Manitoba. It has an area of 2,086 square miles, and is 122 miles long and twenty miles in width at the widest part. Small boats can safely ply the lake, but numerous shallow places prevent navigation of large vessels. Its waters are stocked with whitefish and pike, and it is much in favor with anglers. The lake discharges into Lake Manitoba through the Waterhen River.

WINO'NA, Minn., the county seat of Winona County, 103 miles southeast of Saint Paul, on the Mississippi River and on the Chicago, Burlington & Quincy, the Chicago & Northwestern, the Chicago Great Western, the Chicago, Milwaukee & Saint Paul and the Green Bay & Western railroads. The city has good water transportation. It conducts a large trade in grain, lumber and live stock. Its industries include sawmills, railroad shops, flour mills, wagon works and manufactories of patent medicine, flax fiber, farm implements, shoes and candy.

A state normal school is located here, and the city has a seminary for young women, a business college and a public library. Prom-

inent structures include a Federal building, a courthouse, a city hospital, Watkins administration building and the Margaret Simpson Home. Winona is partially surrounded by bluffs of peculiar rock formation, Sugar Loaf and Trempealeau Mountains being especially picturesque. The place was settled in 1851, and the city was chartered in 1857. Population, 1910, 18,583, remaining about the same to the present time.

WINSLOW, JOHN ANCRUM (1811–1873), an American naval officer, commander of the *Kearsarge* in the battle between that vessel and the Confederate cruiser, *Alabama,* in 1864. The *Alabama* was sunk, and Captain Winslow, who had already won distinction in battle, was promoted to the rank of commodore. After the Civil War he commanded the Gulf squadron and later the Pacific squadron. He was made rear-admiral in 1870.

WIN'STON-SA'LEM, N. C., the county seat of Forsyth County, 110 miles west of Raleigh, on the Norfolk & Western and the Winston-Salem Southbound railroads. The adjacent municipalities of Winston and Salem were consolidated to form the present city in 1913. Winston-Salem has the largest factory output of tobacco products of any city in America, amounting to 80,000,000 pounds per year and valued at $45,000,000, or more than $1,300 per capita for the entire population. Other industries include the manufacture of textiles, hosiery and underwear, furniture, wagons and blankets. Prominent educational institutions include the Salem Female Academy and the Slater Industrial Academy and Normal School. A Federal building, a Carnegie Library and the Salem Museum are among the principal buildings. Salem was founded in 1766 by the Moravians, and was governed for a time as a Church community. Population, 1910, 22,891; in 1917, 33,136 (Federal estimate).

WIN'TER, the season of the year between autumn and spring, beginning with the winter solstice, about December 22, and ending with the vernal equinox, about March 21. In the United States, the months December, January and February are commonly regarded as the winter months, although winter does not begin until December 21 or 22.

WIN'TERGREEN, a small plant, several inches high, which grows in the woods of the northern hemisphere. Glossy, oval leaves, green all winter, grow on the ends of reddish stems. Small white or pink flowers spring from the base of the leaf stems and scarlet berries follow them. The leaves yield an oil which is much used for flavoring and for medicinal purposes.

WINTHROP, JOHN (1588–1649), one of the early colonial governors in America, and one of the most admirable characters in early American history. He was born at Edwardston, Suffolk, England, of wealthy parents, and was educated at Trinity College, Cambridge. Puritan zeal prompted him to share the fortunes of the colonists, and in 1629 he sailed to America with 900 emigrants as governor of the New England colony. From then until the time of his death he worked for the spiritual and material interests of his people.

Winthrop helped to organize the New England Confederation, and was its first president. His *Journal* is a valuable record of New England events from 1630 to 1649.

WIRE, metal drawn into an even thread or slender rod, usually cylindrical in form. The metals most commonly employed in the making of wire are gold, silver, copper and iron. The finest wire is made from platinum. Wire was formerly produced by hammering metal into plates which were then cut into strips and rounded by beating. In modern wire manufacture, steel or iron billets are heated in a furnace to white heat and put through several trains of rolls, emerging from the last roll about a quarter of an inch in diameter. These rods are wound on reels while still hot, are coiled, boiled in sulphuric acid for cleaning, washed in water, coated in lime, baked for two hours at low temperature, and then turned over to the wire drawer.

In order to draw these prepared rods into wires of smaller diameter, the workman pulls them through a series of steel dies by means of a cast-iron reel. Very fine wires may be drawn as many as twenty times, each time through smaller holes. As the process of drawing causes brittleness in wire, it must be annealed as occasion demands by heating in cast-iron pots, this process always being followed by an acid bath for cleaning. Wire used for small springs or nails, when hardness is an essential, is not annealed. For drawing very fine wires of gold, silver or platinum, dies of diamonds, rubies or other hard stones are used. Wire for outdoor use is galvanized to prevent rusting.

The uses of wire are innumerable, from the forming of the gigantic steel cable, with

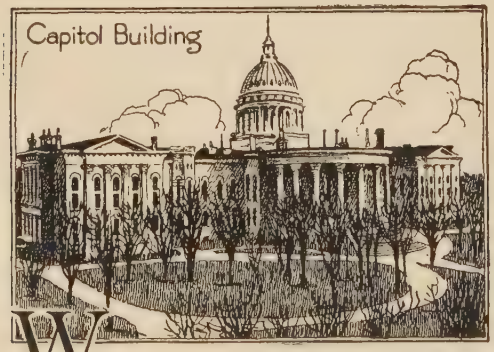
a tensile strength of 130 tons to the square inch, to the delicate micrometer of the telescope, employing platinum wires as fine as $\frac{1}{30,000}$ of an inch in diameter. Telephone and telegraph wires, trolley wires, wire netting and wire fencing are some of the most common uses. A sinister use during the war was that made of barbed wire enmeshed into an impenetrable network to hinder enemy advance. The United States army alone used 100,000 miles of barbed wire in its campaigns in France. American factories sold over 2,000,000 miles of this wire to the allied nations from 1915 to the date of the armistice in November, 1918.

WIRE GLASS, window glass made with an inside mat of open mesh wire. The wire is embedded in the molten glass at a temperature sufficiently high to insure adhesion of the glass to it. The surface of the pane can be finished in such style as to adapt the glass for different uses. It may be ribbed, polished or "rough rolled." Wire glass is strong, and is used for window panes where ordinary glass is apt to be broken. It is one of the most efficient safeguards against fire, since, if broken by heat, it does not fall. Two men claim the invention of wire glass, Frank Schuman of Philadelphia and Leon Appert of France.

WIRELESS TEL'EGRAPH. See TELEGRAPH, WIRELESS.

WIRELESS TELEPHONE. See TELEPHONE, WIRELESS.

WIREWORMS, *wire'wurmz*, a name given by farmers to the larvae, or grubs, of several species of click beetles. The worms are said to live for years, during all which time they are destructive to vegetation. See CLICK BEETLE.



WISCONSIN, a north-central state of the American Union, one of the foremost American commonwealths in educational and political matters, and industrially one of the most prosperous. Wisconsin is popularly called the *Badger State*, with reference to the small woodland animal originally found in large numbers in its forests. The name *Wisconsin* is of Indian origin, and has been variously interpreted to mean *rushing river* and *great rocks*. The flower emblem of the state is the violet.

Location, Area, Population. Wisconsin lies north of Illinois and east of Minnesota and Iowa; nearly all of the western boundary is formed by the Saint Croix and the Mississippi rivers. A good portion of the eastern boundary line lies in Lake Michigan; the state adjoins the state of Michigan on the northeast, and at the extreme north it follows the shore line of Lake Superior. With a maximum length of 315 miles and a width of 294 miles, the state is irregularly oblong in shape and has an area of 56,066 square miles; of this total 810 square miles are water. Twenty-four states surpass it in area, and twelve in population. In 1910 the population was 2,333,860, representing an average density per square mile of 42.2. In July, 1918, according to Federal estimates, the population was 2,553,983. Wisconsin has about four times as many inhabitants as Rhode Island the most densely-populated state, but it is about forty-five times as large as that smallest commonwealth. Nevada, which is twice the size of Wisconsin, and the least populous of the states, has about one-twentieth as many inhabitants. Among the neighboring states Iowa is nearest Wisconsin in size, having an area but eighty-one square miles greater. Illinois is about 600 square miles larger.

People and Cities. The state has a large percentage of foreign-born inhabitants, as these make up about one-fourth of the population. Germans are the most numerous, followed by Norwegians, Austrians, Russians and Swedes. Less than half the people live in cities or towns of 2,500 or more inhabitants. There are eighteen cities with populations exceeding 13,000. Milwaukee, the largest city, with an estimated population of 445,008 in 1917, was in that year the thirteenth city in the Union in size. The next five cities, with Federal estimates for 1917, are as follows: Racine (47,465), Superior (47,167), Oshkosh (36,549), Kenosha (32,833) and LaCrosse (31,833). The state capital is Madison (31,315).

About fifty per cent of the inhabitants are Roman Catholics, and over one-fourth are Lutherans. Other prominent denominations are the Methodist, Congregational, Baptist, Presbyterian, German Evangelical and Episcopalian.

Surface and Drainage. The surface of Wisconsin is generally a great rolling plain. A low height of land extends through the state north and south, a little east of the middle line, and at a point about thirty miles south of Lake Superior it meets another elevation extending east and west. The highest altitudes of this ridge are about 1,800 feet. These ridges form watersheds, from which the land slopes in all directions. There are no high mountains, but the rivers flow through well-worn valleys in some localities, and along the Mississippi and other streams there are bluffs. There is also a considerable bluff along Green Bay. The lowest part of the state borders on Lake Michigan, which is a little less than 600 feet above sea level.

Wisconsin is divided into three drainage areas. The northwestern part of the state is drained into Lake Superior by a few short rivers, chief of which are the American and the Boise Brulé. The portion east of the watershed extending north and south is drained into Lake Michigan, and with the exception of the Fox, all of the rivers in this drainage area are short. Some of the most important are the Menominee, forming a good part of the boundary between Wisconsin and the northern peninsula of Michigan, the Peshtigo and the Oconto.

Nearly three-fourths of the state is drained into the Mississippi River. The chief tributaries are the Saint Croix, forming a part of the western boundary, the Chippewa, the Black and the Wisconsin, which flows through the central part of the state and is the largest river wholly within its boundaries. Each of these rivers has numerous tributaries, but none of them is navigable for large boats. Through a part of its course the Wisconsin has cut its way through sandstone bluffs, forming the Dalles, noted for their beautiful scenery. In the southeastern, north-central and northern parts of the state are numerous lakes, which are favorite resorts for summer residence and also for hunters and fishermen. The largest of these is Lake Winnebago, almost directly south of Green Bay. Lakes Geneva and Mendota are noted for their beautiful landscape setting. The former is a popular summer resort; on the latter is the city of Madison, seat of the state university.

Climate. The winters are long and severe, but of uniform temperature, with many dry, clear days; the summers are short and hot. But the cold of winter and the heat of summer in the eastern section are tempered by the waters of Lake Michigan. In northern Wisconsin, snow usually falls early in the winter and covers the ground until late in the spring; in the south there is often little snow. The average rainfall is thirty inches; the mean temperature at LaCrosse is 44°. During the summer season thousands of visitors seek the state to enjoy its attractive lakes and woodlands and healthful climate.

Mineral Resources. Though the state derives a much greater income from agriculture than from mining operations, it has valuable deposits of zinc, building stone, iron ore and clays. Zinc, the most valuable product, occurs in the southwestern section, and in the output of this mineral the state ranks fourth in the Union. The value of the yield increased from $3,173,526 to $15,223,204 between 1914 and 1916. The most important building stones are granite, limestone and sandstone, and the annual value of the output is about $2,400,000.

Iron ore is found in the valley of the Menominee River and along the Gogebic range in the northern part of the state. The deposits are a continuation of those in Michigan and Minnesota, and the ores are similar in quality. In quantity of output, however, Wisconsin is far behind Michigan and Minnesota, and it produces only about one-third as much as Alabama, the state third in order. The annual output is valued at about $2,200,000; pig iron valued at nearly $4,000,000 is produced. Clay suitable for making brick and tiling is widely distributed, and the manufacture of cream-colored brick is one of the important industries of the state. Other minerals of value include lead, natural rock cement, graphite and mineral waters.

Agriculture. Originally a large part of the state was covered with forests. In the north these were pine, and the intervening regions consist of marsh or land covered with boulders; hence this part of the state is not well suited to general agriculture, but it is well adapted to dairying, and that industry has been extensively developed. The middle and southern portions consist of fertile prairie lands. They are supplied with an abundance

of moisture, and the temperature is suitable to growing all crops produced in a medium or cool temperate climate; hence all of the central and southern part of Wisconsin is under tillage and produces abundant crops.

Oats and corn are the most important grain crops; the annual harvest of oats is approaching the hundred-million bushel mark. In this produce Wisconsin is the fourth state in the Union. About 4,500,000 tons of hay are produced a year, over 2,600,000 acres being devoted to this crop. Barley and rye are also raised in large quantities, and buckwheat is another important product. In the central part of the southern group of counties is a fertile tobacco belt, Wisconsin ranking seventh among the states in amount of tobacco raised. Sugar beets, potatoes, beans, peas, apples and small fruits are other flourishing products. The state is one of the few regions in America producing cranberries on a commercial scale, and it is one of the first five states in the production of peas and beans.

Dairying is one of the most profitable lines of agriculture, and Wisconsin produces more butter than any other state. New York alone exceeds it in output of milk. In January, 1918, there were 1,785,000 milch cows and 1,394,000 other cattle.

Manufactures. According to statistics compiled by enumerators of the Thirteenth Census, Wisconsin ranks eighth among the states in manufacturing. Abundant water power, proximity to good markets, excellent railroad facilities and a wealth of natural resources have all aided in the development of industry. The most important is the making of lumber and lumber products. While the forest section is in the north, the mills are widely distributed, and the annual output of the industry is valued at over $60,000,000. Foundry and machine-shop products are next in order, including agricultural implements, carriages and automobiles.

In the cities along the Wisconsin and Rock rivers there are many thriving establishments devoted to the making of butter, cheese and condensed milk, the products third in rank. Tanning, flour and grist milling, slaughtering and meat packing, the canning of vegetables, paper making and shipbuilding are other flourishing industries, and before the prohibition era Milwaukee was one of the leading cities in the world in the manufacture of beer. Milwaukee, Racine, Kenosha, Sheboygan, LaCrosse, Appleton and Superior are the chief manufacturing centers. At the Thirteenth Census Wisconsin ranked first in the making of butter, cheese and condensed milk, horse clothing, straw goods and enameled wares. In the manufacture of leather gloves, cement, carriages and wagons, saws and windmills, it was second, and it was third in output of glass, steam railway cars and musical instruments.

Transportation and Commerce. The western part of the state has an outlet through the Saint Croix and the Mississippi, and the northwestern section, through Lake Superior, while the estern portion, bordering its entire length upon Lake Michigan, has communication with the Great Lakes through Racine, Milwaukee, Sheboygan, Manitowoc, Sturgeon Bay and a number of other points. The state is well supplied with railways, there being about 7,500 miles of steam railroad within its borders, besides about 900 miles of electric lines. The leading railroads are the Chicago, Milwaukee & Saint Paul, the Chicago & North Western, the Wisconsin Central, the Minnesota, Saint Paul & Sault Sainte Marie, the Green Bay & Western, the Chicago, Burlington & Quincy and the Northern Pacific. A canal connects the Fox and Wisconsin rivers at Portage, and a canal at Sturgeon Bay connects Green Bay with Lake Michigan. Wisconsin has 12,000 miles of surfaced roads.

The commerce of the state is extensive. Iron, dairy products, live stock, lumber and its manufactured products, flour and grist mill products, potatoes and other vegetables are exported in large quantities. The imports consist of manufactured goods and machinery. Milwaukee is the chief center of trade on Lake Michigan and for the state at large, while Superior is the chief commercial center for the northwestern part of the state.

Government. The legislature consists of a senate and a house of representatives, the senate having thirty-three members, and the house, 100. The members of the assembly are elected for two years; of the senate, for four years. The sessions are biennial and are unlimited as to time. The executive department consists of a governor, a lieutenant-governor, a secretary of state, a treasurer, an attorney-general and an insurance commissioner, each elected for two years, and the state superintendent, elected at a spring election for four years. The courts consist of a supreme court of seven judges, elected for ten

years, and circuit courts in the judicial circuits established by the legislature, each circuit having one judge elected by the people. Local administration is by counties.

Education. Wisconsin expends over $13,000,000 annually on its public schools, and maintains one of the best systems in the Union. The state board of education consists of the governor, the secretary of state and the state superintendent of public instruction. The University of Wisconsin at Madison is at the head of the system, and is directly affiliated with the high schools throughout the state. There are also normal schools at Milwaukee, Oshkosh, Plattville, River Falls, Stevens Point, Superior, Whitewater and La-Crosse. Wisconsin was the first state in the Union to establish a system of county training schools for the preparation of teachers for the country schools; it was also the first to establish county schools of agriculture and domestic economy for rural communities. Schools of both types are being established from year to year. In connection with its educational department, Wisconsin maintains an excellent system of school libraries, which are so managed as to bring a large list of the best books within reach of every inhabitant of the state, at practically no expense. The traveling libraries have no connection with the educational department, being promoted by the state library commission. The library of the historical society at Madison is also one of great value. Another agency for extending popular education is the excellent extension system of the state university (see WISCONSIN, UNIVERSITY OF).

Important institutions of higher learning not under control of the state include Beloit College at Beloit; Lawrence University at Appleton; Ripon College at Ripon, Milton College at Milton and Milwaukee-Downer College at Milwaukee.

Institutions. The school for the blind is at Janesville; that for the deaf and dumb is at Delavan; the school for the feeble-minded is at Chippewa Falls, and the state public school for dependent children is at Sparta. There are hospitals for the insane at Mendota and Winnebago and a hospital for the criminal insane at Waupun; the incurable insane are cared for in county institutions which receive state aid. A state tuberculosis sanitarium was established at Wales in 1905, and a home for the feeble-minded and epileptic in Racine County in 1916.

Items of Interest on Wisconsin

As Wisconsin was the last state made out of the Northwest Territory, it was given all the area left, 56,066 square miles.

Wisconsin's climate is marked by much sunshine and high temperature in summer and by clear sky with low temperature in winter; the climate is tempered to a limited degree by the large bodies of water east and north.

Many of the wild animals have been killed off, but deer are still plentiful in the northern part of the state, and wolves, black bears and foxes are occasionally seen; waterfowl of all kinds is abundant and fishing is both a great sport and an important business.

In Grant County there is a huge mound shaped like an elephant, with a trunk thirty-one feet long. This is a relic of the Mound Builders of prehistoric times.

Wisconsin's many lakes, waterfalls and rapids are the result of glacial action.

School attendance is compulsory for all children between the ages of seven and fourteen, in cities for the entire school year, and in towns and villages for six months.

Before the era of white settlement the territory was inhabited by Potawatomis.

The highest point in the state, Rib Hill, is in Marathon County. It has an altitude of 1,940 feet.

Questions on Wisconsin

Describe briefly the surface and drainage of Wisconsin.

Name five important agricultural products and four minerals.

What can you say about the importance of dairying in Wisconsin?

What is the most important manufacturing industry?

Name five other manufacturing industries.

Name five important agricultural institutions.

Explain, as fully as you can, Milwaukee's importance in commerce and manufactures.

There is a state soldiers' home at Waupaca and a national soldiers' home at Milwaukee. The penal and reformatory institutions consist of a state prison at Waupun, a state reformatory near Green Bay, an industrial school for boys at Waukesha, a house of correction and industrial school for girls at Milwaukee, and an industrial home for women in Fond du Lac County.

History. Probably the first white man to enter the territory of Wisconsin was Jean Nicolet, who was dispatched in 1634 by Champlain and traversed the southern part of the state. Other traders and missionaries followed, including Radisson and Groseilliers, Father Allouez and Marquette and Joliet. Meantime, several missions had been established, one at La Pointe on Lake Superior in 1665 and one at the site of De Pere in 1669. By the Treaty of Paris, in 1763, the territory, with all the northwest was transferred to Great Britain and, after the Revolution, to the United States, where it formed a part of the Northwest Territory. However, the French and Indians in the region still remained hostile to the United States and fought against it during the War of 1812. The discovery of lead mines led eventually to rapid influx into the territory, and after the defeat of Black Hawk there was a large agricultural immigration.

Wisconsin was successively joined to Indiana, Michigan, Illinois and again to Michigan Territory, and it was erected into a separate territory in 1836. In 1847, the population of the state having been vastly increased, a constitution was adopted, and Wisconsin was admitted to the Union in the following year. For a time the chief incident in the political history of the state was the scandal arising from the promiscuous granting and sale of public lands to railroads. One of the first movements leading to the Republican party was a convention at Ripon, Wis., in 1854. The state was consistently opposed to slavery, and its supreme court declared that the Fugitive Slave Law was unconstitutional in the state. During the Civil War, Wisconsin furnished more than its quota. Since that time large areas have twice been devastated by forest fires, but the state has otherwise enjoyed phenomenal prosperity. It has been almost consistently Republican in politics.

Within recent years many progressive laws have been passed, including workmen's compensation, mothers' pension and child labor measures and a law regulating campaign contributions. In 1913 there was enacted a law requiring a physical examination for all men who applied for marriage licenses. This was subsequently upheld by the state supreme court. Women were given Presidential suffrage in advance of the passage through Congress of the suffrage amendment.

Related Articles. Consult the following titles for additional information:

CITIES

Appleton	Kenosha	Racine
Ashland	La Crosse	Sheboygan
Beloit	Madison	Superior
Eau Claire	Manitowoc	Waukesha
Fond du Lac	Marinette	Wausaw
Green Bay	Milwaukee	
Janesville	Oshkosh	

PHYSICAL FEATURES

Dalles — Mississippi River
Great Lakes — Wisconsin River

HISTORY

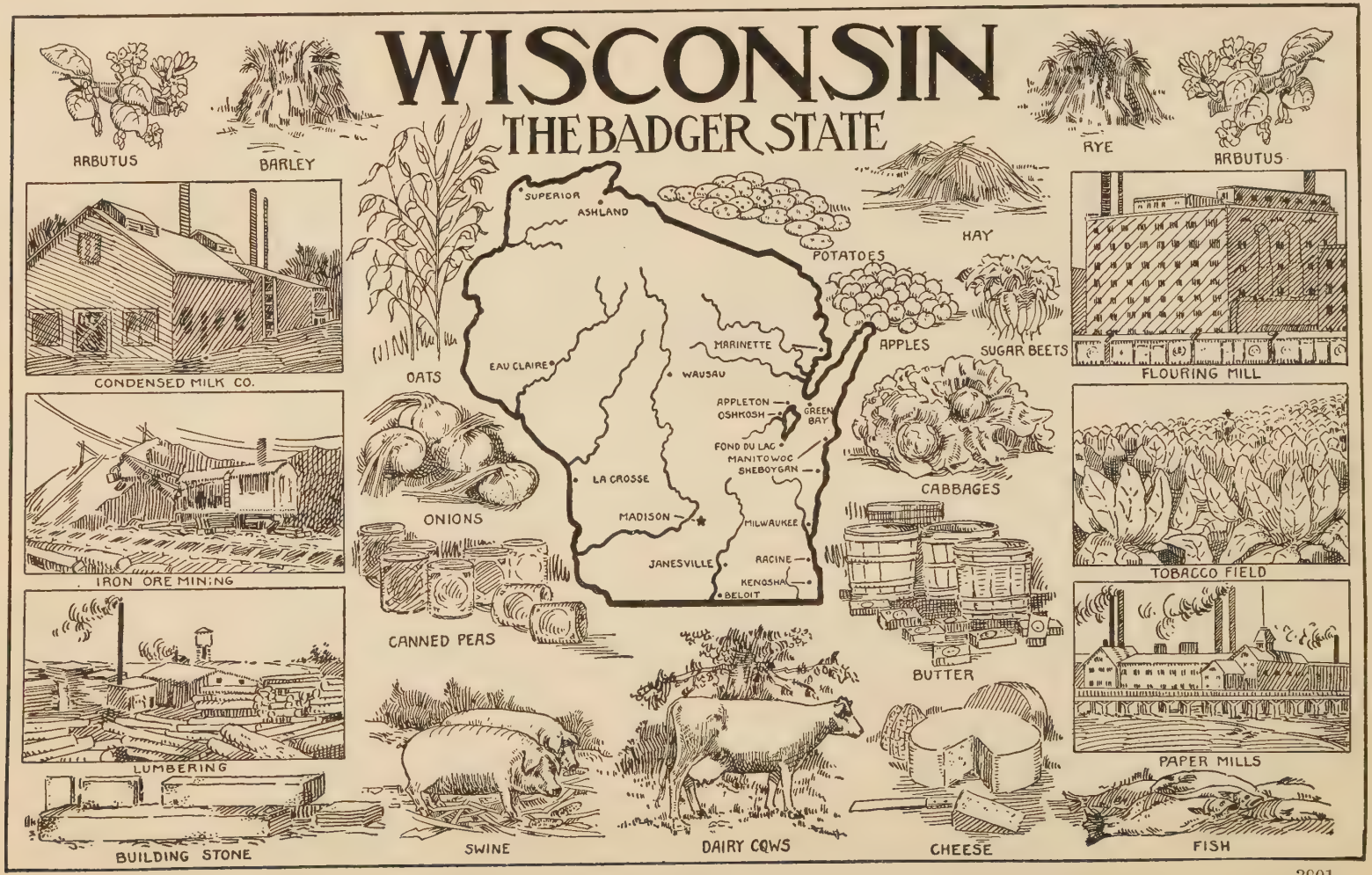
Black Hawk — Ordinance of 1787
Northwest Territory

WISCONSIN, UNIVERSITY OF, one of the largest and most progressive of the American state universities, established at Madison in 1838.

The university stands at the head of the educational system of the state and gives free tuition to students who are residents of Wisconsin, in all departments, except in the summer term. Through an admirably-equipped and organized extension department thousands of persons unable to attend regular university sessions are given exceptional educational advantages. The university maintains three colleges, five schools and two divisions—colleges of letters and science, engineering and agriculture; schools of law, medicine, music, the graduate school and the library school; divisions of physical education and university extension.

The library building is one of the finest in the United States, and contains the university library of 215,000 volumes; the library of the Wisconsin State Historical Society, 192,000 volumes, and the library of the Academy of Sciences, Arts and Letters, 5,000 volumes, beside thousands of valuable documents and pamphlets. During the regular session there are about 5,000 students in residence; the total yearly enrollment is nearly 7,000. There is a faculty of nearly 700. The university owns property and equipment valued at over $5,000,000.

WISCONSIN RIVER, the principal river of the state whose name it bears. It rises near the boundary between Michigan and


WISCONSIN
THE BADGER STATE
ARBUTUS
BARLEY
RYE
ARBUTUS
CONDENSED MILK CO.
OATS
HAY
POTATOES
APPLES
SUGAR BEETS
FLOURING MILL
IRON ORE MINING
ONIONS
CABBAGES
TOBACCO FIELD
CANNED PEAS
BUTTER
LUMBERING
PAPER MILLS
BUILDING STONE
SWINE
DAIRY COWS
CHEESE
FISH
SUPERIOR
ASHLAND
EAU CLAIRE
MARINETTE
WAUSAU
APPLETON
OSHKOSH
GREEN BAY
FOND DU LAC
MANITOWOC
SHEBOYGAN
LA CROSSE
MADISON
MILWAUKEE
JANESVILLE
RACINE
KENOSHA
BELOIT

Wisconsin, flows southward to Portage City, thence in a southwest direction, entering the Mississippi River four miles south of Prairie du Chien. Its length is about 600 miles, and it is navigable for steamboats to Portage City, about 200 miles. Here a canal connects it with the Fox River. Its passage through some deep gorges forms the celebrated Dalles, near Kilbourn City.

WISTA'RIA, a climbing shrub of the pea family, native to China and North America. Several varieties have been introduced into England. When in flower they are among the most ornamental of garden plants. The flowers, shaped like pea-blossoms, are of various tints and shades of lavender, and hang in clusters which sometimes are several feet long. The Chinese and American species are much used in the United States for garden ornament.

WIS'TER, OWEN (1860–), an American novelist and story-writer, born in Philadelphia and educated at Harvard. He was admitted to the bar, but after two years gave up law work for literature and won wide notice through his stories of Western life. Of these *The Virginian* has been most popular. Wister has written biographies of *Ulysses S. Grant, Oliver Wendell Holmes* and *Benjamin Franklin,* and he has contributed to magazines both short stories and verse. Among his later books are *Lady Baltimore, The Simple Spelling Bee, The Seven Ages of Washington, Members of the Family* and *The Pentecost of Calamity.*

WITCH'CRAFT At all times in the world's history there has existed a belief that some persons, in league with powers of darkness, had powers to cast "spells" or inflict injury at a distance by supernormal means. This belief became general in the fifteenth, sixteenth and seventeenth centuries, and in England and America the use of the supposed power to harm through coöperation of a demon was called *witchcraft,* meaning *craft or practice of a witch.*

Women were most often accused of witchcraft, though men and even children were suspected. Laws were passed to deal with them and persecutions were numerous. It is estimated that in England, Germany, France, Spain and Italy 100,000 innocent persons perished under the charge of witchcraft between the middle of the fifteenth and the middle of the sixteenth century. Various tests were applied to ascertain whether or not the person was a witch, such as pricking the body of the victim all over, to find the insensitive spots protected by the devil, and throwing witches into deep water, under the presumption that they would float if possessed.

The witchcraft frenzy broke out among the Puritans of New England in 1648. In Salem, Mass., Cotton Mather, a clergyman of wide influence and great power as a pulpit orator, wrote a work entitled *Memorable Providences Relating to Witchcraft and Possessions* and another entitled *Wonders of the Invisible World.* By the distribution of his writings and his utterances in the pulpit, he succeeded in arousing the superstition to the highest pitch, at a time when it was beginning to abate in Europe.

Many of the teaching men of the province were influenced by his writings and sermons, and, as clergmen in those days constituted a part of the magisterial authority, he succeeded in procuring the execution of nineteen persons. The good sense of the Puritans at last revolted against these atrocities, and a reaction set in. Samuel Parris, a clergyman, who was one of the chief persecutors, made a confession; others also relented, and there were no more persecutions for witchcraft in the American colonies. In England the last trial for witchcraft was in 1722, and it resulted in acquittal.

WITCH HA'ZEL, a North American shrub which is of economic importance as the source of a healing lotion obtained by distilling the leaves in alcohol. The plant has branches of a very peculiar appearance, for they twist and curve in all directions. In olden times the witch hazel was believed to have supernatural power, and the forked twigs were used as divining rods. The plant does not bloom until late in the fall, and the fruits ripen the following year. The yellow flowers grow in showy clusters. A small, woody capsule encloses the seeds.

WITENAGEMOT, *wit e nah ge mote',* in English history, the name given to the old Anglo-Saxon assembly, which consisted of the king, the ealdormen, the higher ecclesiastics and the thanes. This body had power to elect the king, when a succession was in dispute, or to depose a king if it saw fit, to make treaties, to collect revenue and to enact laws. Under a weak king it was able to exercise all of these functions, but a strong king might easily make most of them merely

nominal. The Norman Conquest put an end to this assembly, and the Parliament which grew up later in England was a separate institution, though it had its roots in this early body.

WIT'NESS, in law, (1) one who signs his name as affirmation of the genuineness of another's signature; (2) a person who gives testimony under oath in a judicial proceeding. Any person can be summoned before a court to give evidence. If he fails to appear he is liable to punishment for contempt (see CONTEMPT). The summons by which he is ordered to appear is called a *subpoena;* if he is ordered to bring a document or other thing in his possession, he is summoned by a *subpoena duces tecum,* meaning *bring with you under penalty.*

WITTE, *vit'te,* SERGEI YULIEVITCH (1840-1915), a Russian statesman and diplomat, born at Tiflis. After his graduation from the New Russian University at Odessa, he took up journalism; later he was engaged by the government in railway service. In the Russo-Turkish War Witte had charge of the transportation of troops on the Odessa railway and so distinguished himself that at the close of the war he was made manager of the Southwestern Railway of Russia. Two years later he became chief of the Imperial Railway department and president of the tariff commission. His next promotion was to the office of Minister of Finance, in 1893. His policy in this office led to the rapid development of manufacturing industries in Russia. He introduced the gold standard, made the sale of alcohol a government monopoly, concluded several important commercial treaties, especially with Germany, and made large foreign loans, whereby the Trans-Siberian Railway could be built. In 1903 a strong opposition arose and Witte was removed from power and made president of the Committee of Ministers. At the Treaty of Portsmouth, N. H., at the close of the Russo-Japanese War, Witte was especially prominent. When he returned to Russia, the czar conferred upon him the title of count. In 1905 he was appointed Prime Minister of Russia, but in 1906 he resigned this position.

WITTENBERG, *vit' ten berK,* GERMANY, a town in the province of Saxony, Prussia, situated on the Elbe, fifty-nine miles southwest of Berlin, of special historical interest because of its association with Luther and Melanchthon. It was to the door of the Schlosskirche at Wittenberg that Luther nailed his celebrated theses, and within this church both Luther and Melanchthon are buried. (See LUTHER, MARTIN; REFORMATION). The town contains a number of educational institutions, in one of which, the University of Wittenberg, Luther for a time was instructor. The industries include the manufacture of woolen and linen goods, hosiery, machinery, pottery, etc. Population, about 20,000.

WOAD, *wode,* a group of plants of the mustard family, chiefly natives of the Mediterranean region. *Dyer's woad,* a species yielding a blue dye, was formerly much cultivated. This has been superseded by indigo; but a fine blue is still obtained by mixing the two. The leaves when gathered are reduced to a paste, fermented for two weeks, made into balls, sun-dried, and subjected to further fermentation.

WODEN, *vo'den.* See ODIN.

WOLF, a carnivorous animal, allied to the dog. The common European wolf, found almost everywhere in North America, also, is yellowish-gray, with a blackish band, or

WOLF

streak, on the fore legs. The ears are erect and pointed. The hair is harsh and strong, the tail straight, bushy and drooping. The height at the shoulder is about two and a half feet. The wolf is swift of foot and crafty, a destructive enemy to sheep and poultry. It runs in packs, to hunt the larger quadrupeds, such as deer and elk. When hard pressed with hunger, these packs have been known to attack isolated travelers and even to enter villages and carry off children.

In general, however, wolves are cowardly and stealthy. They are still plentiful in some parts of Europe and the United States. They probably ceased to exist in England about the end of the fifteenth century. The small *prairie wolf* or *coyote,* living on the western plains of the United States, is a burrowing animal.

WOLFE, JAMES (1727–1759), a British general, whose victory in the Battle of Quebec, September 13, 1759, won Canada for Great Britain. Wolfe was born at Westerham, Kent, England. He entered the army early and served in Scotland and in Flanders. When it was decided, in 1758, to send an expedition to Cape Breton, Wolfe was appointed by Pitt brigadier-general. He advised an attack on Quebec and was selected to lead the enterprise, in which capacity he showed wonderful courage and genius. After having been driven back from the fortress, he led his men, by night, up a steep, narrow path, to the Heights of Abraham, above the city, and here he met the French under Montcalm. While leading a charge, he had one of his wrists shattered by a shot, but he did not stop. Another shot struck him, and he still advanced, but a third lodged in his breast and proved fatal. His last words, when he was told that the French were retreating, were, "Now God be praised; I die in peace." A monument on the battlefield bears a simple inscription in honor of the conqueror.

For a biographical sketch suitable for school use, see Biography, pages 440-442.

WOLF FISH, a savage fish, that has a mouth armed with sharp, strong teeth. When captured, the fish is said to bite the nets and even to attack the fishermen. Around the coasts of Great Britain it attains a length of six or seven feet, but in more southern seas it grows to a still larger size. In Iceland the natives eat the flesh and make the tough skin into a sort of leather suitable for purses, bookcovers and the like.

WOLSELEY, *woolz'ly,* GARNET JOSEPH, Sir, Viscount (1833–1913), a British general, born in Ireland. He entered the army as ensign in 1852, took part in the second Burmese War, where he was severely wounded, and served with distinction in the Crimean War. He engaged in the siege and capture of Lucknow during the Sepoy Rebellion, and was in command in 1860 in the Chinese War. In the following year he was dispatched to Canada, and in 1870 he carried the Red River expedition to a successful issue. Three years afterward he was appointed to the command of an expedition to punish the king of Ashanti, and after a brief campaign he entered Kumassi and subdued the king. He was publicly honored and given a grant by the government of $125,000.

He was placed in command in Egypt, in 1882, where his forces successfully stormed the lines of Tel-el-Kebir and captured Arabi Pasha. For this he received the thanks of Parliament, was created a baron and was promoted to the rank of general. In 1882 he was sent to Egypt to rescue General Gordon at Khartum, but arrived two days after Gordon had been killed and Khartum had fallen. On his return to England he was created a viscount. In 1890 he was made commander of the troops in Ireland, and in 1895 he was raised to the supreme command of the British army.

WOLSEY, *wool'zy,* THOMAS, Cardinal (1475?–1530), an English statesman, for many years the most powerful man in England, below the king. He was born at Ipswich, the son of a butcher, and was educated at Magdalen College, Oxford, where he took his degree as a scholar of distinction. When Henry VIII became king, the advancement of Wolsey was rapid. Successively he was appointed canon of Windsor, dean of York, bishop of Lincoln, archbishop of York, lord chancellor of the kingdom, cardinal and Pope's legate.

His power and his revenues were equaled only by those of the Crown. Part of his immense revenues he expended in display, and part for the advancement of learning. He endowed the College of Christ's Church, Oxford, founded several lectures and built the palace at Hampton Court, which he presented to the king. His preferment by the king was largely the result of a remarkable series of diplomatic victories, in which Wolsey had been the means of enabling Henry to hold the balance between Francis I and Emperor Charles V.

In his ambitious career the cardinal had made many enemies, who were held in check so long as he retained the favor of his royal master. This favor Wolsey lost when he failed to obtain from Pope Clement a decision granting the king's divorce from Catharine of Aragon. The enemies of the fallen prelate now succeeded in banishing him from court and stripping him of his dignities.

Finally, after a brief respite, during which he was restored to some of his offices and had returned to his see of York, he was arrested on a charge of high treason. On his way to London, as a prisoner, he died at Leicester Abbey.

WOLVERINE, *wool vur een'.* See GLUTTON.

WOMAN'S CHRISTIAN TEMPERANCE UNION, THE NATIONAL, a woman's organization, founded in Cleveland, Ohio, in 1874, for the purpose of unifying the work of women in temperance and social reform. It now has state, district, county and local societies in every state and territory, and it contains a membership of over 300,000. It is the largest organization exclusively of women that has ever been effected and has over forty distinct lines of work, each under the management of national, state, district, county and local superintendents. The society has been instrumental in securing in nearly every state the enactment of laws requiring the public schools to give instruction in the effects of stimulants and narcotics on the human system; through their influence many laws for the better protection of girls and women have also been passed, and industrial homes for girls and houses of refuge for fallen women have been established. The official organ is the *Union Signal,* published at Chicago. Headquarters of the society are at Evanston, Ill., in "Rest Cottage," the former home of Miss Frances E. Willard.

The World's Christian Temperance Union was formed in 1883, through the influence of Miss Willard. It now has local organizations in most Christian countries. The badge of members everywhere is the white ribbon.

WOMAN'S RELIEF CORPS, a patriotic organization founded in Denver, Colo., in 1883, by a group of women desirous of acting in coöperation with the G. A. R. The specific objects of the society may be stated as follows:

To aid and assist the G. A. R. and perpetuate the memory of their heroic dead; to find homes for the Union Veterans, their widows and orphans, and to emulate the deeds of our army nurses; to maintain true allegiance to the United States of America; to inculcate lessons of patriotism and love of country among our children and in the communities in which we live; to encourage the spread of universal liberty and equal rights to all.

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The organization has thirty-six departments, comprising about 2,640 local corps, and has a total membership of over 160,800.

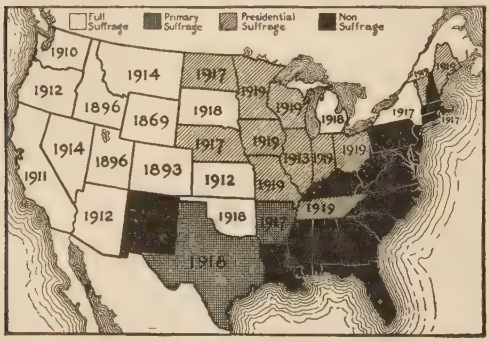
WOMAN SUF'FRAGE, the right of women to vote on an equality with men. The agitation to give women a political status equal to that of men is merely one phase of the great movement to recognize woman in every possible way—legally, socially, intellectually, morally, politically—the equal of man. In the field of business this agitation for a fair and equal opportunity for women had made more progress than in any other field, up to 1919. In nearly all departments of skilled labor, in clerical positions, in the professions, women are efficient and successful workers.

The movement to secure woman suffrage is distinctly a product of the nineteenth century, although many authors and statesmen since Plato have discussed the position of woman and have urged equal rights. One of the first American suffragettes was Abigail Adams, the wife of John Adams; she wanted the Constitution to recognize women as voters.

In nearly all civilized countries women either have won or are still fighting for suffrage, and in most of the countries liberated from autocracy during or at the close of the World War the women were immediately given political rights when new governments were set up. Thus, women vote in Czecho-Slovakia, Finland, Germany, Austria, Hungary, Poland and Russia. In all the divisions of the United Kingdom women voted for Parliamentary candidates for the first time in December, 1918. New Zealand, Australia and South Africa are equal-suffrage nations, and in Canada women enjoy provincial suffrage in all the provinces except Quebec. Tasmania, Denmark, Holland, Iceland, Norway and Sweden have also enfranchised their women citizens.

In the United States. In the United States the movement for woman suffrage really dates from 1848, when the first woman suffrage convention was held, in Seneca Falls, N. Y. Among its leaders were Elizabeth Cady Stanton and Lucretia Mott. In 1869, through the efforts of Mrs. Stanton and Susan B. Anthony, the National Woman's Suffrage Association was formed. In 1890 this organization united with one founded the same year by Henry Ward Beecher, and the name National American

Woman's Suffrage Association was adopted. The organization in coöperation with numerous state societies worked tirelessly for the extension of women's political rights, and in



WOMAN SUFFRAGE MAP

The map shows the status of women suffrage on March 1, 1920. The white areas are full-suffrage states; slanting lines indicate Presidential suffrage; squares, primary suffrage; black, no suffrage. A Consitutional amendment to grant women suffrage rights to all women of the United States passed the House of Representatives on May 21, 1919; the Senate, June 4.

1919 a woman suffrage amendment to the Constitution passed both Houses of Congress. When the necessary thirty-six legislatures ratify it, this will be the XIXth amendment. By referring to the map the reader may see the progress of the movement.

WOM'BAT, a burrowing mammal belonging to the same order as the kangaroo, having the characteristic pouch for carrying the young (see MARSUPIALS). Wombats are found only in Australia and Tasmania. They look somewhat like small bears, are two to three feet in length and have a coat of long, coarse fur, yellowish-black or grayish-brown in color. The head is broad and flat, the eyes and ears are small, and the tail is short. The creatures feed on leaves, roots and vegetables, coming out of their burrows at night in search of food. Their flesh tastes somewhat like pork; the fur is used in making rugs and mats.

WOMEN'S CLUBS. With the increase in facilities for the education of women and with their growing share in public life, came the feeling of the necessity for coöperation along lines in which they were interested. The first societies of women were religious, charitable and social organizations. As educational advantages were extended to women, study clubs sprang up among them, and from these have developed the highly efficient women's organizations of to-day.

At present there exist in the United States a great number of clubs for women. A great many of these clubs are *departmental,* that is, are divided into groups interested respectively in literature, household economics, municipal improvements, politics, and so on, each group coöperating with the others and the interests and activities often overlapping. Others are devoted exclusively to politics, art, travel, domestic science, or are made up of members of some profession.

Within recent years women's clubs have brought about many reforms in school administration and municipal management. They have turned their attention systematically to promoting child welfare, improving the condition of working women and awakening the public conscience generally to a realization of the need of reform. In many cities, owing to their influence, vacant property has been converted into playgrounds or into kitchen gardens for the poor. Prisons, asylums, charitable organizations, dance halls and innumerable other institutions have felt their influence.

In 1889 an invitation was issued by a prominent club in New York to different clubs throughout the United States to a general meeting. In the following year the General Federation of Women's Clubs was formed, the membership consisting originally of sixty-three clubs. At present the General Federation holds meetings every two years in some large city. The total membership is about 2,000,000.

WOOD, LEONARD (1860–), an American soldier and administrator who was the originator of military camps for college students and citizens' training camps, such as that at Plattsburg, N. Y. He was born at Winchester, N. H., and educated at Pierce Academy, Middleboro, and Harvard University, where he was graduated in medicine in 1884. He joined the medical staff of the army, and in 1886 was the medical line officer in Captain (afterwards Major-General) Lawton's campaign against the Apache Indians. In 1908 he received the Congressional Medal of Honor for distinguished services in that cam-

LEONARD WOOD

paign. He was appointed assistant surgeon of the army in 1888, and in twelve years rose to the rank of major-general of volunteers.

At the outbreak of the Spanish-American War, General Wood (then Colonel) and Theodore Roosevelt organized the First Cavalry, known as the "Rough Riders." Wood was first and Roosevelt second in command of the regiment which is famous for its gallant charge at San Juan Hill.

General Wood was appointed governor-general of Cuba in 1899 and continued in the position until the United States retired from the island in 1902. He displayed rare tact and administrative ability, especially in improving the sanitary conditions of Santiago and Havana. Yellow fever, a former scourge of the island, has been practically unknown in Cuba since General Wood's administration. In 1903 he was placed in charge of a division of the army in the Philippines and in the same year was made a major-general in the regular army. In 1908 he was made chief of the Department of the East, with headquarters at New York. In 1910 he was special ambassador to Argentina, and the same year was appointed chief of staff, retaining the position until 1914, when he returned to the command of the Department of the East.

While he was chief of staff, General Wood inaugurated military training camps for college students and the citizens' training camps, which later were important agencies in training officers for the army. He has always been a strong advocate of military preparedness. When the United States entered the World War, General Wood was transferred to the Department of the South, with headquarters at Charleston, S. C. In April, 1918, he was assigned to the command of the 89th Division at Camp Funston, Kansas. The Washington administration did not permit him to take a command in France. From Camp Funston he was transferred to the command of the Central Department, with headquarters at Chicago, in 1919. In this position he exerted great influence in securing employment for soldiers returning from the war.

WOOD AL'COHOL, or **METHYLATED ALCOHOL**, a liquid having the appearance and many of the properties of pure alcohol. It is obtained from the destructive distillation of wood, and is used as a solvent for resin and varnishes and as a fuel in the same way as ordinary alcohol. It mixes with water in all proportions. A mixture of seventy-five per cent water and twenty-five per cent alcohol in an automobile radiator will prevent freezing at a temperature of five degrees above zero; a mixture of fifty per cent each will prevent freezing at twenty degrees below zero. Wood alcohol should never be used medicinally, either externally as a liniment or internally, as it is very poisonous, producing vertigo, coma, blindness and death.

WOOD'BINE. See HONEYSUCKLE.

WOOD CARVING, the art of producing sculpture in wood. Wood carving was probably the earliest form of sculpture. As far as known, the Egyptians were the first wood carvers. Specimens of their work, made more than 4000 B. C., are still in existence, and it is quite probable that the Greeks obtained their first ideas of sculpture from the wood carving of these people. The Romans also carved many of their early statues from wood. In the first century of the Christian era wood carving was used in the decoration of churches, and many pieces still in existence show the remarkable skill of the artists and workmen of that time. From the early centuries of the Christian Era wood carving fell into disuse, until about the eleventh century, when it was again revived, and used, as before, in the decoration of churches.

Wood carving as practiced to-day is confined to the ornamentation of altars, pulpits and choir stalls for churches; to a few articles of the most expensive furniture; to the decoration of expensive interiors of dwellings and public halls, and to ornaments. Among European nations the art is practiced with the greatest skill in Tyrol, Switzerland, and some of the provinces of Italy and Germany. Among the Eastern nations the Persians are remarkably skilful in carving wood. The work is finely executed, but shows a tendency to overcrowding, which mars the general effect. The Chinese and Japanese also produce wood carvings of decided merit.

All the finest work is done by hand, with small chisels, shaped for the purpose. Oak, mahogany, ebony and many of the softer woods are used. Before carving, the wood should be thoroughly seasoned. The completed work is usually finished by rubbing down in oil. In the United States but little hand carving is done, though in some manual training schools it is now a part of the course.

WOOD'CHUCK, the popular name of an animal of the squirrel family, common in the United States and Canada. The woodchuck is the American marmot and is often called the *ground hog*. It is of a heavy form, from fifteen to eighteen inches long, blackish or grizzled above and chestnut red below. It feeds on vegetables and is very destructive to crops of red clover and alfalfa. In the winter it hibernates in burrows. There is a popular superstition that the woodchuck first comes out on Candlemas Day (February 2); if it sees its shadow it returns to sleep, because it knows that six weeks of cold weather will follow.

WOOD'COCK, a bird belonging to the same family as the snipe, differing from the latter in having a more bulky body and shorter legs. It is widely distributed over North America, Europe, Northern Asia and Japan. It spends the summers in pine

WOODCOCK

forests and the winters in southern swamps and moist woodlands, where worms, snails and slugs are plentiful. It is active by night and quiet during the day. If discovered near its nest it feigns injury, or it may carry its young away to safety, one at a time, between its thighs. The bird is about twelve inches long. The upper plumage is an intermingling of ruddy, yellowish, and ash, and is marked with black spots. Underneath, it is yellowish red with zigzag markings. The eyes are large and are set far back. The bill, nearly half the length of the body, is used with great skill in digging worms.

WOOD ENGRAVING. See ENGRAVING, subhead *Wood Engraving*.

WOODEN HORSE. See MYTHOLOGY, *Story of the Wooden Horse*.

WOODMEN OF AMERICA, MODERN, a fraternal and insurance society founded in 1883 at Lyons, Iowa, and the following year chartered under the laws of Illinois. It is the largest fraternal benefit organization in America, having a membership of more than a million. The head officer is known as head cousul, and the various geographical divisions, of which there are more than 14,000, are called camps. From its founding to April, 1, 1919, the order had paid out in death claims more than $210,000,000. One of the beneficial features of the society is a large and well-equipped tuberculosis sanatorium at Woodman, Colo.

WOODMEN OF THE WORLD, a fraternal and insurance order founded in 1890 at Omaha, Nebr. The organization is divided geographically into three main camps, one of which is the Sovereign Camp of the World, whose executive committee is also the governing body of the entire order. The Woodman's Circle, an affiliated organization, of which Woodmen may become members, is controlled by a body called the Supreme Forest. Woodmen pay old-age benefits and erect monuments to deceased members. By levying a special assessment they were able to pay benefits in all cases of members killed in the World War. Since its founding the order has paid out in benefits more than $100,000,000. In 1919 it had 13,186 subordinate camps and a membership of approximately 1,000,000.

WOOD'PECKER, the name of a large group of climbing birds, of which there are

YELLOW-BELLIED SAP SUCKER

a number of different species. They have long, straight, angular beaks, adapted to perforating the bark of trees. Their tongues are long, slender and armed with a barbed,

horny tip. They can thrust their tongues far out of their mouths and so spear insects in the depths of their burrows. Their tongues are also covered with a sticky, slimy substance, that helps to hold their prey. When feeding, they usually ascend the tree spirally, aided by the spiny points which terminate their tail feathers. They tap here and there on the tree-trunk, searching for the holes in which insects are hidden, and often tear away large parts of rotten trees, for the larvae concealed in them.

The *sap sucker* is a species that is fond of the sap of trees and bores round holes, which it arranges with geometrical exactness in broad bands around the trunk of a tree. It especially favors the pines, and in feeding it moves about over the checkerboard of holes, taking the sap from them regularly, as it accumulates. The *ivory-billed woodpecker* of the southern United States is a large bird, about twenty-one inches long, bright black and white in color, the male having a large bright scarlet crest. Like most of the other woodpeckers, this one excavates its nest in suitable dead trees. The *red-headed woodpecker,* the *black and white woodpecker,* the *hairy woodpecker* and the *downy woodpecker* are well known in the Northern states. The redheaded woodpecker often lights on the shingles of houses or on a hollow branch and strikes his bill in a noisy clatter, stopping now and then to call out his hoarse, rough note. The woodpeckers are found in almost every temperate part of the globe, except that none ever existed in Australia and Egypt. See FLICKER.

WOOD PE'WEE, a little bird of the flycatcher family, related to the phoebe. It is brown on the back and yellowish-white underneath; the quills are brown, with light edges. The spread of the wings is about twelve inches. The bird has a rapid flight and catches insects with skill. Its low, plaintive little note, *pee-a-wee,* may be heard in the woods, all through the long summer, at early dawn and during the twilight hours. The birds spend the summer in the United States and Canada, and in winter they migrate to South America. The nest is a wonderful structure of mud, grass and moss lined with down and other soft materials, and hangs bracketlike against a beam or tree. Two broods are raised annually in spring and autumn. See PHOEBE.

WOOD SPIRIT. See METHYLATED SPIRIT.

WOODSTOCK, ONT., the county town of Oxford County, is situated about midway between Detroit and Niagara Falls, on the Canadian Pacific and the Grand Trunk railways, and on a line of the Grand Trunk, which runs from Port Dover on Lake Erie to Owen Sound and other Georgian Bay ports. It is also connected with the Michigan Central and Wabash systems by a branch of the Canadian Pacific. The city is beautifully situated at the confluence of the Thames River and Cedar Creek. Its famous avenues of trees, general attractiveness and healthfulness make the city a favorite summer resort.

Woodstock is an important manufacturing and commercial center. The leading manufactures include furniture, pianos and organs, textiles, wagons and sleighs, harness, cereals, flour, agricultural implements, automobiles, stoves and furnaces and numerous other products. The city has excellent hotels, a collegiate institute and a Y. W. C. A. It is also the seat of Woodstock College. Population in 1911, 9,320; in 1918, about 11,000.

WOOL AND WOOL'EN MANUFAC'TURE. Wool, the modified hair of sheep and several species of goats, is, with the exception of cotton, the fiber most extensively used in the manufacture of cloth and clothing. Woolens afford warmth without great weight, and are a protection against extreme heat as well as against cold. They are soft and flexible, and of them the most healthful clothing is made.

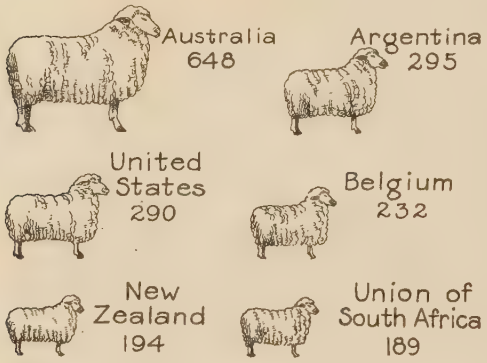
Structure and Grades. If we draw a fiber of wood through the fingers from tip to base it feels rough; if we draw it from base to tip, however, it is smooth and soft. An examination of wool through the microscope shows the cause of this difference. Wool fiber consists of minute scales or plates, which overlap like the scales on a fish. The difference in quality of the fiber is due to the difference of these scales in size and shape.

Wool is graded as coarse, medium and fine, according to the length and size of the fiber. The finest sheep's wool is obtained from the Merino sheep and varieties that have been developed from this breed. The wool from which alpaca and mohair are made is that of the Cashmere goat, from which the soft, silken Persian shawls and rugs are made. Some wool resembles fur in fineness.

For purposes of manufacture, wool is divided into *carding wool,* which includes that

of short, curly fibers, and *combing wool,* which includes the long fibers. The coarsest of the long fiber wools are known as *carpet* and *blanket wools.* The quality of wool varies in the same fleece, that on the shoulders and sides being the best and that on the back the poorest.

Production. Under normal conditions, the leading wool-producing regions of the world are Australia, Argentina, the United States, the United Kingdom and South Africa. There are in the United States about 50,000,000 sheep, and the annual production of wool is between 280,000,000 and 290,000,000 pounds. States leading in the production are Montana, Wyoming, New Mexico, Oregon, Utah and Idaho. About 260,000,000 pounds are imported each year.



LEADERS IN WOOL PRODUCTION

Manufacture. The following are the chief processes employed in making woolen cloth:

When the wool is brought to the factory, it is carefully sorted, and that having the same grade of fiber is placed together. It is then thoroughly cleaned by being dusted, scoured with soap or lye and hot water, and then rinsed. After this, if colored cloth is to be made, the wool is dyed. It is then dried and is ready for the second important step in the process, that of preparing it for the loom.

The dried wool is first run through a machine, which removes any burs that may have adhered to the fiber. It is then run through the *picker,* which pulls all of the little tufts of wool apart and also enables the manufacturer to mix wools of different colors in any proportion desired. By mixing white and brown or blue and black or blue and gray, many very pleasing effects are obtained. After picking, the wool passes through the carding machines, of which there are usually three. Each of these draws out the fiber and straightens it and places the wool in the form of a loose band, or roll. Each successive machine straightens the fiber and reduces the size of this band, making it each time proportionately stronger. When the wool leaves the third card, it is in the form of a *sliver,* an untwisted yarn a little larger than the heavy crocheting yarn. As it comes from this machine it is wound upon large spools, or bobbins, and is ready for spinning.

The spinning is done on the mule jenny, and a large number of threads are spun at a time. The size of the thread and the hardness of the twist depend upon the way in which the machine is gauged. For a fine thread that is hard twisted, a machine which revolves very rapidly and also draws the thread out rapidly, is necessary. The spun yarn is wound upon spools ready for being placed in the loom. The arrangement for this consists of frames upon which these spools are placed in such a position that the thread unwinds from them directly, to make the warp of a width and number of threads desired. The woven cloth is finished in the style desired, possibly re-dyed, pressed and wound into bundles containing about fifty yards each, in which form it is placed upon the market.

Related Articles. Consult the following titles for additional information:

Alpaca	Sheep
Cashmere Goat	Shoddy
Dyeing	Spinning
Felt	Teasel
Fiber	Tweeds
Flannel	Weaving
Mohair	Worsted

WOOL'FLOWER, CHINESE, an ornamental plant, which has been introduced into America from China since 1910. It is very showy when in bloom, each stem being capped with a dense, ball-like cluster of deep red, woolly blossoms. The plant is hardy and bushy and attains heights under three feet. It blossoms in July.

WOON'SOCKET, R. I., in Providence County, fifteen miles northwest of Providence, on the Blackstone River and on the New York, New Haven & Hartford Railroad. It is an important center for the manufac-

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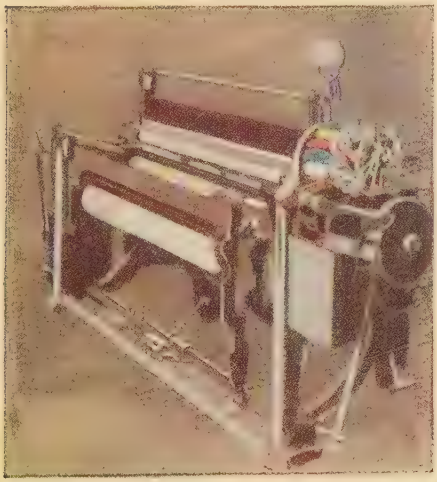

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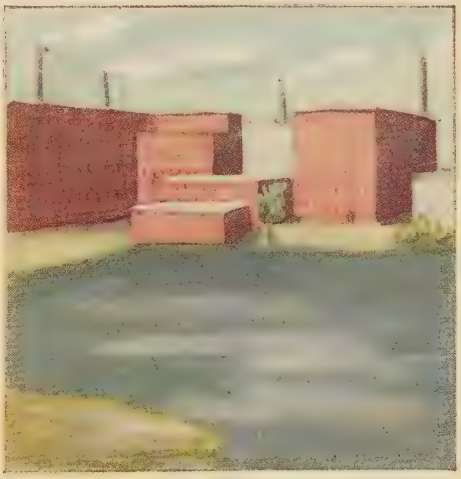

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DRAWN EXPRESSLY FOR THE NEW PRACTICAL REFERENCE LIBRARY BY THE CHICAGO SCHOOL OF APPLIED AND NORMAL ART. M. J. MC MASTER

WOOL

1, Shearing of sheep.
2, Sorting and grading.
3, Carding.
4, Combing.
5, Drawing.
6, Spinning.
7, Weaving.
8, Woolen factory.
9, Products.

induced them to remove to Alfoxden, in the immediate neighborhood of his own residence at Nether Stowey. Here the two poets held daily intercourse, and after a twelvemonth they published *Lyrical Ballads,* in literary copartnership. This volume contained as Coleridge's contribution *The Ancient Mariner,* and as Wordsworth's, among others, *We are Seven* and *Lines on Tintern Abbey.* Although the poems were received with almost complete public indifference, yet Wordsworth felt that he had found his mission, and after a winter spent in Germany, he and his sister settled at Grasmere, one of the most beautiful places in England, where he gave himself up to literary work. Thenceforth his life was marked by few incidents. Those worth noting are his marriage, in 1802, with Mary Hutchison; his appointment, in 1813, to an inspectorship of stamps, and his removal to Rydal Mount; several journeys into Scotland and to the continent; his acceptance of a D. C. L. degree, conferred upon him in 1839 by the university of Oxford, and his accession, in 1843, to the laureateship, on the death of Southey.

The public and the critics were slow to recognize Wordsworth's ability, refusing utterly to accept his idea that poetry may deal with simple and natural subjects, presented in simple and natural language. Coleridge, Lamb, De Quincey, Southey, Keats and others were always his admirers, however, and his faith in his own mission was too strong to be shaken. His great philosophic poem, which, in his own phrase, was to be the Gothic cathedral of his labor, received only a fragmentary accomplishment in *The Prelude, The Excursion* and *The Recluse.* Yet enough was achieved in his smaller poems to justify his own conception of himself as a "dedicated spirit," and to set him apart among the greatest of England's poets. His intense sympathy with nature and his firm belief in the brotherhood of man find expression in all of his poems; and his language, although always simple, sometimes rises far above what he insisted it should be, the unadorned language of prose. Among the most beautiful of Wordsworth's poems are the *Ode on the Intimations of Immortality, Ode to Duty, the Solitary Reaper, To a Highland Girl, I Wandered Lonely as a Cloud* and *Yarrow Revisited.* His sonnets are among the finest ever produced by any English poet in any age.

WORK, a general term for effort expended toward a given end, but it also implies motion against a resisting force, that certain results may be obtained. A man who lifts a weight, in labor or in play, performs work; the resisting force he encounters is the force of gravitation. The impulse which sends the electric current along a copper wire to light a room or run a motor performs work. The water which in falling wears away solid rock performs work just as surely as does that which falls over a water-wheel and turns the machinery of a mill. Work is accomplished whenever one body transfers its energy to another body.

WORK'HOUSE, a name applied in England to institutions for the maintenance of paupers. In the United States those establishments where vagrants, drunkards and other such offenders are detained are sometimes called workhouses, but more properly they are called houses of correction. In these institutions the inmates are put to work according to their capacity and ability. Religious and secular instruction is supplied, and habits of industry, cleanliness and order are encouraged. In England, while the parliamentary act of 1722 to promote the workhouse movement remained in force pauperism was almost unknown there.

WORKMEN'S COMPENSATION LAWS. See EMPLOYER'S LIABILITY.

WORLD'S COLUMBIAN EXPOSITION, an international exposition of arts and industries, in commemoration of the four hundredth anniversary of the discovery of America by Columbus. It was built in Jackson Park, Chicago, on the shore of Lake Michigan, and was open from May 1 till November 1, 1893. The construction of the exposition occupied two years, besides the time consumed in preparatory work, such as study, investigation and advertising. The exposition was formally opened May 1, 1893, Grover Cleveland, then president of the United States, setting the intricate machinery in motion by pressing a button connected with electrical appliances. His opening address was listened to by an assemblage estimated at fully 400,000 people. The exhibition comprised over 400 buildings, covering fully 200 acres of ground. Fifteen of these buildings were occupied by special classes of exhibits, of individuals, firms, states and nations, every important nation on the globe being represented in some one or more de-

partments. The largest building was the Manufactures and Liberal Arts Building, 787 by 1,687 feet in size, covering nearly forty acres, including the surrounding colonnade, and costing $1,500,000. Its enormous roof was supported by the largest steel arches ever used in building construction. Besides the buildings used for the exposition proper, nearly every state in the Union and many foreign nations erected buildings for social and exhibition purposes.

The architectural beauty of the whole exposition was one of its greatest triumphs, and, indeed, it has rarely, if ever, been excelled. The center of the main group of buildings was the Court of Honor, consisting of a wide plaza, with a lagoon in its center, having at one end a beautiful electric fountain, sculptured by McMonnies, and terminated at the other by a graceful semicircular peristyle.

The whole cost of the exposition to its managers before the opening was more than $18,000,000, the cost of operation exceeded $7,000,000, while the expenditures by states and foreign nations were not less than $8,000,000. Adding to this enormous sum the expenses incurred by private exhibitors, the total cost of the exposition was probably $40,000,000. The attendance from the opening to the closing day was 27,539,041, or slightly less than the attendance at the Paris Exposition of 1889. The largest attendance upon any one day was on Chicago Day, October 9, when 716,881 people passed through its gates. One of the most novel and interesting features of the exposition was the Midway Plaisance, a boulevard 600 feet wide, connecting Jackson and Washington Parks. Along the sides of this avenue was arranged a motley collection of amusement enterprises, the most interesting consisting of representative scenes from the life of various peoples of Europe, Africa and the Orient.

An interesting and important feature of this fair was the World's Congress Auxiliary consisting of special congresses on all the main topics of human interest, social, physical, industrial, educational, philosophical, commercial and religious. The congresses of religion presented features of peculiar interest, being attended by representatives of the Hindu, Buddhist, Shintoo, Mohammedan, Zoroastrian and various other religions of Asia and Africa, as well as by the most illustrious divines of Europe and America.

WORLD WAR (1914-1919), the greatest war in human history, and the only one that drew into its vortex nations of every continent. It is sometimes called the GREAT WAR and the WAR OF THE NATIONS, but no name has been found or can be suggested which can fittingly describe its magnitude.

In respect to number of men engaged and casualties, amount of money lavished, human effort expended, number of nations involved and changes in political and social structure resulting from it, the World War has no parallel among the conflicts which men have been fighting from the dawn of history. While it loosed all the hatred and brutality inherent in human nature, bringing out primitive passions and racial antipathies in all their rawness, this war also served as a background for nobility and courage almost divine, and it illuminated with startling clearness some of those fundamental conceptions of freedom and justice upon which the future security of humanity rests.

Causes of the War. These causes were rooted deep in past conditions of society, government, and economic and political relations. No one would say that any particular event was in itself responsible for the World War. It was, indeed, like the breaking out of a sore on the surface of a world that for centuries had been harboring the germs of hideous diseases. It does not follow, however, that all nations engaged in the conflict were equally blameworthy. No discussion of the causes of the war can ignore the ambitious plans of the German imperialists, to whom the declaration of war was an opportunity to carry out certain well-defined aims for German domination of the world.

The General Situation in 1914. A general European war had been foreseen and prophesied by many observers long before the actual crisis. Prophecies of this nature were based on certain conditions in Europe which held dangerous possibilities and may

be regarded as underlying causes of the war. Outstanding elements in the situation were racial antagonisms and the development of nationalism. In 1871 Germany forced on France a peace which violated the principle of national unity when Alsace-Lorraine was forcibly annexed to the empire. The French, a proud, high-spirited people, never forgave or forgot this humiliation, and the two neighboring nations were friends only on the surface.

In Austria-Hungary the racial problem was acute. That monarchy was a loose union of many diverse peoples, possessing no bond of loyalty or of common interest. Among these were the Bohemians, or Czechs, mindful of their lost independence, and determined to maintain their national consciousness; and the Southern Slavs, in Bosnia, Croatia and other sections, with visions of the establishment of an independent Slavic state. The Pan-Slavic agitation was becoming more and more a source of anxiety to the Austrian government, and the situation was complicated by the known sympathy of Russia, the greatest of the Slav nations, for the aspirations of the Slavic people both in Austria-Hungary and in the Balkans.

The Balkan states themselves presented a baffling problem. Here the mixture of races was so complicated that an accurate geographic arrangement of peoples, in conformance with the principle of national unity, was a hopeless task. The Balkan wars of 1912–1913 had nearly forced Turkey out of Europe and had left Serbia, Montenegro, Rumania and Greece with increased territory and augmented national consciousness. Rumanians, Serbians and Greeks all had their dreams of bringing under their respective flags neighboring territories peopled by their own kinsmen. Bulgaria, on the other hand, smarting from its recent defeat, was nursing a sense of injustice and hoping for a day of revenge.

Added to this conflict of aims and hopes was the antagonism between Slav and Teuton. The defeat of Turkey in 1912–1913 was a blow to both Germany and Austria-Hungary, for it increased the prestige of the Slavs, and made more real the menace to the integrity of Austria-Hungary. Germany was no less interested in preserving the Hapsburg monarchy than was the Austro-Hungarian government itself, for a disrupted monarchy meant a check to Germany's plan to dominate the Balkans and to secure a gateway to the East. It meant also the collapse of Emperor William's *Mittel Europa* (Middle Europe) scheme.

In discussions of the background of the war much has been said of Pan-Germanism, which was the spirit of national consciousness carried to the extreme limit. The Pan-Germans, who included not only militarists, but historians, scientists, educators and statesmen, conceived the German people, no matter where they were located, as permanently retaining their nationality. The most ambitious of this group believed that it was the mission of Germans to extend their *kultur* (culture) over the world, and to accomplish this by conquest, if necessary. In this connection the theory was advanced that the German was a superior being, destined to dominate other peoples, most of whom were thought of as decadent. While many German authorities denied that the Pan-German doctrine represented official Germany, or a majority of the people, the extensive propaganda of its adherents certainly affected the German nation, and the speeches and acts of the emperor clearly pointed to his sympathy with the theory.

Military preparedness was a necessary corollary of these national ambitions and racial jealousies. Standing armies, huge appropriations for armaments, highly-developed munition factories and the other accessories of war turned Europe into an armed camp; with symbols of war on every hand pacifism waged a losing fight with militarism. Germany's preparations for a possible war were more complete than those of any other nation, partly because of the splendid industrial organization of the empire, and partly because of the spirit of the German people themselves. Bismarck, who had launched the empire on its career by a policy of "blood and iron," was the great national hero, and the necessity of militarism was believed in by the people as a whole. They accepted burdensome taxes as essential to the welfare of the Fatherland.

In 1913 a new army bill in Germany caused a frenzied increase in war preparations in Europe generally, which did not add to the possibilities of peace. Another factor in the situation was the building up of a great German navy by Emperor William, a procedure that England viewed with concern. As a result, the two nations engaged in a

race in naval armaments, with England in the lead, and Germany following with the second largest navy in the world.

Germany's growth in naval strength was a contributing cause to the formation of the Triple Entente by England, Russia and France, one of those military alliances that were another development of national rivalries. In 1882 Italy had joined with Germany and Austria in the Triple Alliance, for common defense. France and Russia, fearing this strong combination, formed a Dual Alliance in 1895, and in 1907 they were joined by England, which was disturbed by Germany's naval policy. It may readily be seen how delicately-balanced was a peace condition with the great powers thus ranged against each other. In fact, between 1905 and 1914 there were several crises, each of which almost brought on war.

Economic rivalry also had a part in setting nation against nation. The colonial expansion of the other nations, notably Great Britain, and the advantages resulting therefrom spurred Germany on to securing its place as a great colonial power, and this brought about the inevitable clash of interests in the colonized and undeveloped parts of the world. In England, Germany's naval program was looked upon chiefly as a plan to overthrow British commercial supremacy. In such manner was the stage set for the great drama of 1914–1919.

Outbreak of the War. On June 18, 1914, the heir apparent to the Austrian throne, Archduke Francis Ferdinand, and his wife were assassinated while on a visit to Sarajevo, the capital of Bosnia. The assassin, a young Bosnian named Gavrilo Princip, was one of the principals in a scheme to incorporate Bosnia in a Greater Serbia. Bosnia, including Herzegovina, was peopled by Serbs who had never become reconciled to the annexation of the province by Austria-Hungary in 1908. Francis Ferdinand was selected as a victim because he was friendly to the idea of placing the Slavs of the Hapsburg monarchy on an equal footing with Germans and Magyars (Hungarians), and the Serbian plotters believed that such a plan would imperil their own scheme.

The affair took on an international aspect because the Austrian government believed that the crime was plotted in Belgrade, the capital of Serbia, by the Serbian government itself. The erection of such a state as Greater Serbia would disrupt the monarchy by paving the way to other Slavic secessions. Accordingly, the Austrian government decided to crush the Serbian movement once for all, and to do so by dealing directly with Belgrade.

On July 23 a stern ultimatum was sent to the Serbian government, ten demands being submitted, and forty-eight hours being given for a reply. These demands required that Serbia should dissolve all societies engaged in Pan-Serbian propaganda, dismiss all teachers or government officials hostile to Austria, suppress publications advancing the movement, take measures to stop the smuggling of arms across the border, permit Austro-Hungarian agents to assist in the suppression of the movement, and Austro-Hungarian representatives to take part in the investigation and punishment of persons accused of complicity in the crime. Serbia's reply to these demands was conciliatory, but Austria seems to have made them purposely unacceptable. The demands that Austrian agents be permitted to help suppress the anti-Austrian movement and that Austrian representatives assist in the judicial proceedings against the plotters were protested against as infringing on the sovereignty of Serbia. Moreover, the smaller state expressed its willingness to submit the disputed questions to The Hague Tribunal or to the decision of the great powers. Austria professed to find the answer unsatisfactory, and on July 28 issued a declaration of war.

The Flame Spreads. The great powers were keenly interested in the outcome of the Austro-Serbian controversy. Germany, having a vital interest in the integrity of the Hapsburg monarchy, supported Austria's attitude and was suspected in a meeting at Potsdam in July, presided over by Emperor William, of having urged its ally to precipitate a crisis. Russia was as vitally interested in preserving the balance of power in the Balkans and of saving Serbia from a state of vassalage. Here again came to the surface the old animosity between Teuton and Slav, with the German alliance eager to extend German and Austrian influence in the Balkans, and Russia determined to play the rôle of "big brother" to the small Slavic states. France, as an ally of Russia, naturally sided against the Teutonic states, but Italy, the third member of the Triple Alliance, held aloof from its allies because they were not entering a war of defense.

The diplomatic wires grew hot during the tense week following July 23. On the 28th Russia openly announced its intention of mobilizing its army against Austria if troops crossed the Serbian border, and on the 29th partial mobilization was ordered. On the same day Sir Edward Grey, the British Foreign Secretary, who had previously made unsuccessful efforts to arrange a conference of the powers to settle the dispute, urged the German government to suggest a method of preventing war between Russia and Austria. No satisfactory basis of agreement could be reached, however, and on the 31st Germany sent an ultimatum to Russia, demanding that Russia cease mobilizing within twelve hours. As the Russian government declared that it was impossible to stop the process, Germany on August 1 declared a state of war against Russia and at the same time requested a statement from France as to its intentions in the event of a war between Germany and Russia. The reply being unsatisfactory, Germany declared a state of war against France on August 3.

Germany, in the meantime, had been hoping that Great Britain, though in agreement with Russia and France, would remain neutral, and had informed the British government that the territorial unity of France would be preserved if Great Britain kept out. It was further stated that no guarantee would be made regarding French colonies. Great Britain refused to promise its neutrality, and to the last moment labored for a compromise. On August 2, however, France was notified by England that its northern coast would be protected from attack by the German fleet. This partial intervention was followed on August 4 by a declaration of war against Germany by Great Britain because of the violation of Belgium's neutrality.

In 1839 the great powers, including Prussia, had entered into a treaty guaranteeing the independence and neutrality of Belgium, and in 1870, when France and Germany were at war, a separate treaty was signed between Great Britain and each of the belligerents, by which Great Britain agreed that if either nation should violate Belgian neutrality the other could rely on England as an ally.

On July 31, 1914, the governments of Germany and France were requested by Great Britain to state their attitude on the question of Belgian neutrality. France replied that in case of war such neutrality would be respected. Germany's reply was evasive, and on August 2 the German Foreign Minister presented to the Belgian Minister an ultimatum demanding that the German forces be permitted to pass through the country (the easiest way to France). In case of refusal Germany warned Belgium it would be treated as an enemy. To its undying honor Belgium declined thus to lend itself to the subjugation of France, and refused the demand, at the same time appealing to Great Britain, France and Russia to carry out the terms of the treaty of 1839.

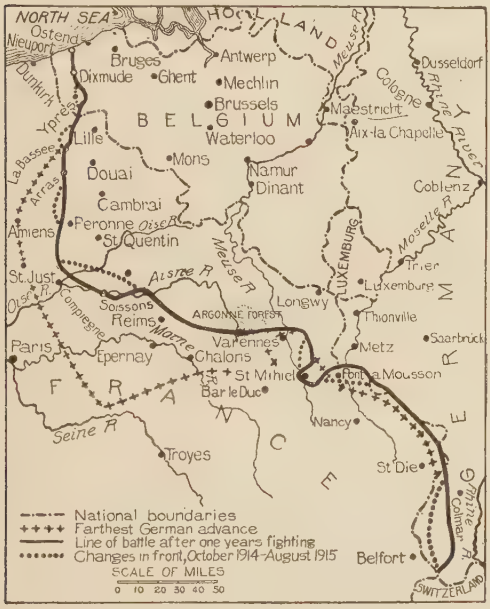
On August 4 Great Britain sent an ultimatum to Germany demanding a favorable reply to its request that Belgium be unviolated, giving the German government until midnight to reply. As no reply was received, England entered the war on midnight, August 4, and thus on August 5, Germany and Austria found themselves surrounded by enemies. Italy, their ally, had declared on August 1 that it would remain neutral. Montenegro elected to go to the defense of Serbia within a few days, and Japan, Britain's ally in the Far East, entered the struggle on August 23. Turkey within a few weeks became an ally of the Teutonic powers.

The list of war declarations for 1914 is as follows:

Austria-Hungary, on Serbia	July 28
Germany, on Russia	Aug. 1
Germany, on France	Aug. 3
Germany, on Belgium	Aug. 4
Great Britain, on Germany	Aug. 4
France, on Germany	Aug. 4
Austria-Hungary, on Russia	Aug. 6
Montenegro, on Austria-Hungary	Aug. 7
Montenegro, on Germany	Aug. 9
Serbia, on Germany	Aug. 9
France, on Austria-Hungary	Aug. 10
Great Britain, on Austria-Hungary	Aug. 12
Japan, on Germany	Aug. 23
Austria-Hungary, on Japan	Aug. 27
Austria-Hungary, on Belgium	Aug. 28
Russia, on Turkey	Nov. 3
France, on Turkey	Nov. 5
Great Britain, on Turkey	Nov. 5

German Drives in the West. Germany was superbly prepared for war, and its mighty military machine lost no time in getting into action. The military operations at once resolved themselves into two great campaigns, for Germany had to meet enemies on its widely separated eastern and western frontiers. Immediately after the war broke out the German strategy became clear. A quick, de-

cisive dash into France was to be followed by the shifting of most of the victorious troops from the west to meet the Russian millions on the east. This plan failed only by the narrowest of margins, partly because the Belgian resistance delayed the advance and gave the French time to organize, and partly because the Russians mobilized more rapidly than



A YEAR OF WAR IN THE WEST

had been expected. When the campaign in France was at a crisis, therefore, the Germans were compelled to weaken their offensive by sending thousands of soldiers to defend their eastern frontier against strong forces of the czar.

In Belgium. The western campaign developed with great rapidity. The Germans appeared before Liége on August 5, and took the city on the 8th. Before the end of August they had taken practically all of Belgium except Antwerp and a narrow strip on the coast. The Belgian army was driven into Antwerp, but early in October was driven out again after a ten-days' bombardment. A part of the Belgian army succeeded in making its escape along the coast and joined the French forces south of Ostend, but about 20,000 took refuge in Holland and laid down their arms. The success of the Germans in pounding their way into Antwerp and other strongly fortified towns was chiefly due to the superiority of their artillery, particularly the 42-centimeter Krupp siege guns.

On the Marne and the Aisne. During the last week in August and the first week in September there took place one of the most remarkable military movements in all history. The German army, of probably 1,000,000 men, advanced in a wide sweep across France almost to the gates of Paris before its advance was checked. In two weeks the main German army advanced over 150 miles. Opposing them was a large force of French soldiers under General Joffre, and a constantly increasing number of British soldiers under General Sir John French. After the fall of Antwerp the extreme left of the allied line was held by Belgian troops led by King Albert in person. While the Germans were occupied in Belgium, the main French armies had made unsuccessful attacks on Alsace and Lorraine, chiefly for sentimental reasons. It was the German plan, therefore, to reach Paris before the French line in the north could be adequately strengthened. This plan, however, miscarried. On September 2 the seat of the French government was moved to Bordeaux, and Paris prepared for a siege. The German right under Von Kluck, however, swept to the east of Paris, thus exposing its flank to the attack of the strong Paris garrison. For five days, September 6th to 10th, the Germans held their positions along the Marne River. Here was fought the greatest battle of the war up to that time and one of the greatest battles of all history. The Marne marked the high tide of German invasion.

By the 12th of September the whole German army was in retreat along the lines over which it had advanced. The retreat, however, was masterly, and in spite of the superior and increasing number of the allied forces, they were unable to turn the defeat into a rout. On the hills along the River Aisne the German retreat came to a halt. Here they retired to strong fortified positions previously prepared for them, positions so strong that the allies could not drive them out by direct attack. The allied right, too, found it impossible to turn the German left, and there remained only the possibility of turning the extreme German right. This attempt was first made about September 15, but was repulsed after the allies had penetrated as far as Saint Quentin. The next flanking movement came in the neighborhood of Cambrai, and the third near Arras; these failed in turn. The German line was now vastly extended from its original position, and as the allies

moved northward the Germans kept pace. At the end of September the German attack on Antwerp began, and the flanking movement of the allies became in fact an attempt to save this fortress and the Belgian army. But the allies were too late.

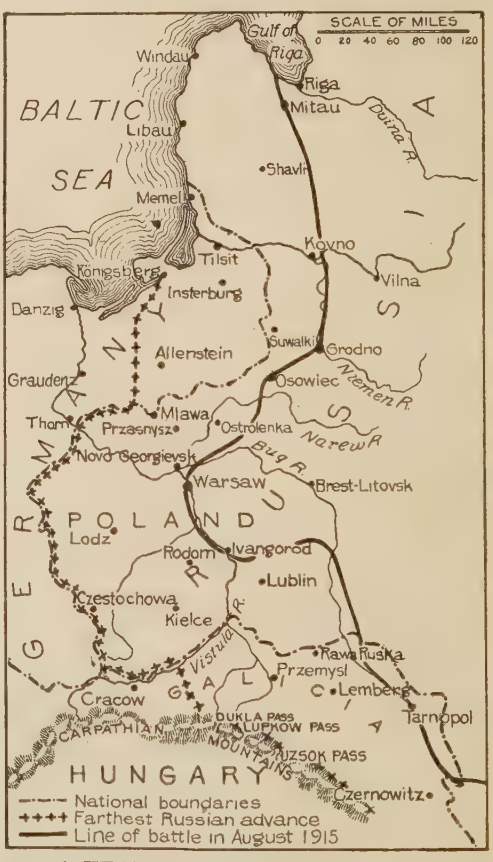
After the capture of Antwerp (October 10), the Germans, by taking Ostend, placed their right flank on the sea coast. Two days later the allied forces reached Dunkirk, thus ending the possibility of flanking movements by either side. The battle-front now extended from the English Channel to Switzerland.

The Battle of Flanders. In October the German army attempted to advance along the coast to Calais, presumably with the object of establishing a base for an invasion of England. For five weeks the battle raged along the canals and the River Yser. No other conflicts during the war were so bloody. In the region of Nieuport, Dixmude and Ypres, the battle raged incessantly, but to no purpose. In spite of enormous masses hurled forward by the Germans, the allied lines held firmly. At the end of five weeks the battle-line was practically unchanged.

Deadlock in the West. From October, 1914, to August, 1915, the battle-front, as shown in the accompanying map, was little changed. There were occasional brilliant successes, but only of local importance. In the neighborhood of Soissons the Germans made a considerable gain, and at the northern end the allies made several gains which straightened the line. In Alsace the French advanced about 10 miles, but they were unable to drive the Germans out of Saint Mihiel. On the whole, the entire line, over 400 miles long, settled down to a condition of siege unprecedented in history. After October the center of interest was transferred to the eastern frontier.

The Eastern Campaign. In the east Poland became the great battlefield, for the chief objective of the Russians was the conquest of Galicia, or Austrian Poland, while the Germans sought the conquest of Russian Poland. During the first month of war the Russians mobilized with unexpected rapidity, advanced in force through East Prussia, and for a few days threatened serious consequences. On September 1 the terrible rout at Tannenberg ended the danger from this source, and made Von Hindenburg one of the great figures of the war. Gradually the Russians were forced back to the Niemen, where they took a new hold and later carried their line back to the German frontier. Here a deadlock arose like that in the west.

Meanwhile, in Galicia, Russia was winning tremendous success. Tarnopol and Lemberg fell, Przemysl was besieged, and by October 1 the Austrians were driven back to within 50 miles of Cracow. At this point the Germans launched a strong offensive movement against the Russian center, which was driven back over 100 miles to the permanent defenses of Ivangorod and Novo Georgievsk. This retreat of the center compelled the Russian left to retreat in Galicia, but the relief to the Austrians was only temporary. The German advance was only seven miles from Warsaw when the Russians, by a threatened flanking movement, compelled a retreat to the German border. Once again, in December, January



A YEAR OF WAR IN THE EAST

and February, the Germans slowly advanced on Warsaw, but were unable to take it. In East Prussia the Russians advanced in force in February, but after the ten-days' battle

of the Mazurian Lakes they were compelled to retire. In Galicia the Russians made themselves masters, finally took Przemysl on March 22, 1915, seized all the passes of the Carpathian Mountains, and were ready to advance in force across the plains of Hungary.

New German Offensive. Just as an invasion of Hungary seemed certain a combined German and Austrian army led by Von Mackensen routed the Russians and drove them out of Galicia, forcing them back to the position they held at the beginning of the war. By the first of August the Germans were again at the gates of Warsaw and on the 4th the city was taken. By this campaign the central powers regained the lost territory and rendered a new Russian offensive impossible for several months.

Turkey in the War. On October 29, 1914, two German warships that had been sold to Turkey, but were still operated by German officers and crews, bombarded Odessa and other ports on the Black Sea. Turkey's explanation of this act was unsatisfactory and on November 3 Russia declared war on the Ottoman Empire. Great Britain and France took like action on November 5. The Turks made unsuccessful attempts to invade Egypt and Russian Caucasia. On February 15, 1915, a fleet of the allies attempted to force an entrance into the Dardanelles and take Constantinople. A large army was landed on Gallipoli Peninsula to assist the fleet. The enterprise failed, and the troops were withdrawn at the end of six months, though it was later known that the Turks were out of ammunition and were ready to capitulate when the allies withdrew. The German emperor looked upon Turkey's entrance into the war as a blow to the integrity of the British Empire and the French colonial empire, as he expected the Mohammedans in these empires to start a Holy War. In this he was completely disappointed.

The War in Asia. Japan, as has been intimated, entered the war as the protector of allied interests in the Far East. On August 19, 1914, an ultimatum was sent to the German Foreign Office requesting Germany to surrender the leased territory of Kiao-chau, China, which the German government had acquired in 1897. Upon refusal of Germany to comply, Japan declared war on August 23, and shortly afterwards began a siege of the port of Tsingtau. On November 10 all of the leasehold was surrendered.

With German power in East Asia thus overwhelmed, the British could give their attention to an offensive against the Turks in Mesopotamia, in order to destroy the German threat to Egypt and the Suez Canal, and to pave the way for an advance into Asia Minor, the heart of the Turkish Empire. Early in the war it was apparent to the entente allies that a blow should be struck at German pretensions in Asia Minor. The *Mittel Europa* scheme of Germany had for its object the control by the Germans of a path southeast through Europe by which Berlin could control the entrance into Asia through Turkey. In Asia Minor the Germans had concessions which justified the hope of ultimate control of a strip of territory to the Persian Gulf. Their railroad already extended to historic Bagdad. If a direct route from Berlin through to the seas south of Asia were established, Great Britain could one day be attacked in India and North Africa, in pursuance of the German dream of world domination.

In November, 1914, the British routed the Turkish garrison at Basra, sixty miles north of the Persian Gulf, and then advanced to Kurna, at the confluence of the Tigris and Euphrates rivers. Moving steadily northward through the spring and summer of 1915, the victorious troops defeated the enemy before Kut-el Amara, on the Tigris, on September 28, and by November had reached a point eighteen miles from Bagdad. Here the British army, which was commanded by Major-General Townshend, was defeated by a greatly superior force and driven back to Kut-el-Amara. In Persia and Turkish Armenia the Russians won several victories over the Turks in 1915, and it was hoped that at the end of the year they might be able to raise the siege of Kut-el-Amara.

German Colonies. Most of Germany's colonial empire was lost early in the war. On August 29, 1914, German Samoa surrendered to an expeditionary force from New Zealand, and on September 11 Australian troops captured the capital of the Bismarck and Solomon islands; German New Guinea was occupied two weeks later. The Japanese, by the end of October, had taken possession of the Marshall, Marianne and Caroline islands. In Africa, Anglo-French forces captured Togoland in August, 1914, and during 1915 occupied German Southwest Africa. In December of that year it was announced that

a force had been raised in South Africa to carry out the conquest of German East Africa. This was speedily accomplished.

Campaign in the Balkans. Serbia, with the aid of a small army of hardy Montenegrins, was able to offer a stiff resistance to invading Austrians, who were driven out of Belgrade in December, 1914, with heavy losses. Austrian defeat was due in part to the Russian invasion of Galicia, which forced Austria to withdraw large numbers of its troops to that theater of war. The good fortune of the Serbs was short-lived, however. The campaign left the country impoverished and exhausted, and ill prepared to cope with a new enemy on its eastern border.

In October, 1915, after months of deliberation, the Bulgars decided to throw in their lot with the Teutonic powers, as Germany and Austria were able to promise them a better territorial settlement than the entente was disposed to offer. In October a Bulgarian army joined the Austro-German forces under Field Marshal von Mackensen, and early in December Serbia was crushed. King Peter and his officials fled, and the Serbian government was set up in Corfu. Albania and Montenegro were brought under control of the Central powers early in 1916, and were held by them until November, 1918.

Situation in Greece. The king and queen of Greece, the latter a sister of the kaiser, maintained a pro-German attitude in the war, while the majority in Parliament, under the leadership of Premier Venizelos, wished to join the entente. Greece was bound by treaty to go to the assistance of Serbia in case the latter were attacked, but King Constantine interpreted this treaty to refer to a Balkan, not a general European, conflict. Accordingly, Greece remained neutral for the time being. In December, 1915, however, after being defeated by the Bulgars on the Vardar River, the allies occupied the city of Saloniki, and made it impregnable, as they interpreted the position of Greece as one of "benevolent neutrality." Venizelos and the allied sympathizers approved of this attitude; the king and his followers protested against the "violation of Greek neutrality."

War Declarations of 1915. The entrance of Italy into the war, as an ally of the entente powers, in May, 1915, was the greatest diplomatic triumph of the year for Great Britain, France and Russia. The war declarations of the year are as follows:

Italy, on Austria-Hungary	May 23
San Marino, on Austria-Hungary	June 2
Bulgaria, on Serbia	Oct. 13
Great Britain, on Bulgaria	Oct. 15
France, on Bulgaria	Oct. 16
Russia, on Bulgaria	Oct. 19
Italy, on Bulgaria	Oct. 19

Italy in the War. Italy had helped save France early in the war by announcing its neutrality. Spared the necessity of guarding the Franco-Italian frontier, the French had been able to concentrate enough forces on the Marne to check the Germans in September, 1914. Germany and Austria, however, spared no pains to conciliate Italy, and entered into lengthy negotiations with Rome to keep the Italians from joining the allies. In this they were unsuccessful, and Italy declared war on Austria on May 23, 1915. There were three forces back of this decision: traditional hostility toward Austria; a popular "irredentist" movement, aiming at the liberation of those Austrian districts inhabited by Italians; a sentiment against Austro-German imperialism and militarism, which was threatening civilization and democracy. The Italians were able to put a finely-trained army into the field at once, which began an invasion of Austria and gained some initial successes. Trent and Triest were the objective points. By the end of 1915 Italian troops had made a good beginning, but were still far from their goal.

Events of 1916. The entente gained two new allies in 1916, Portugal and Rumania. During the year there were major offensives by the Russians, Anglo-French forces and Italians, a successful defense at Verdun, a great battle between the German and English fleets off Jutland, and an extension of German submarine warfare. Other events are noted below.

The New Belligerents. War declarations of 1916 were as follows:

Germany, on Portugal	Mar. 8
Austria-Hungary, on Portugal	Mar. 15
Italy, on Germany	Aug. 27
Rumania, on Austria	Aug. 27
Germany, on Rumania	Aug. 28

Portugal, whose treaty with Great Britain bound it to furnish its ally with 10,000 troops when they were needed, was not asked to take any decisive action until February, 1916, when Sir Edward Grey requested the Portuguese government to take over all German and Austrian merchant vessels interned in Portuguese waters. On Portugal's compliance with

this request the two central powers declared war against Portugal in March. Forty merchant ships were acquired by the entente through this move. Later Portuguese troops engaged in severe fighting on the western front. Rumania declared war on Austria in August, 1916, in the hope of liberating from Austrian rule the provinces of Bukowina and Transylvania, inhabited by large numbers of Rumanians.

The Struggle for Verdun. One of the most desperate campaigns of the war began on February 21, 1916, when a German army under the command of Crown Prince Frederick William began an attack on the fortifications of Verdun, a strongly-fortified city commanding the heights of the Meuse. The Germans hoped by a spectacular victory at this point to discourage the French, quiet political discontent at home, and relieve the French threat at the rich iron mines northeast of Verdun and in German Lorraine. If the French hold on the Meuse heights could be loosened, their army would never be able to conquer Alsace-Lorraine, and the morale of the soldiers would suffer a severe blow. The great drive carried the German troops through the outlying defenses of the fortress, but after months of desperate fighting the French, commanded by General Pétain, were still holding the heart of the salient, and all resolute, indomitable France was ringing with the battle cry of the soldiers, "They shall not pass!"

From February to July the Germans gained 130 square miles of territory, including two battered forts and about forty ruined villages. Then for several weeks there was a lull in the fighting, while the French were making preparations for a counterstroke. It came in October, when General Nivelle, who had superseded Pétain, began an offensive on the east bank of the Meuse, north of the town. In the first onrush Douaumont village and fort, Thiaumont farm and redoubt and Haudromont quarries were recaptured. Other successes followed, and in December a renewal of the offensive brought about the recapture of several other strategic points. Though it took another year of fighting to bring the French lines near to their original position, the failure of the German stroke and the success of the French counter-attack made the battle an allied victory at the end of 1916. Losses on both sides were heavy, with the Germans suffering the more severely.

Battles of the Somme. A military conference of the allies was held in Paris in March, 1916, at which a plan for concerted action was perfected. Hitherto disconnected attacks on the various fronts had given the central powers the advantage because the excellent railway system of Germany enabled large bodies of troops to be moved quickly from one front to another as they were needed. A large British army under the command of Sir Douglas Haig was mobilized in France along the Somme, while the German Crown Prince was carrying on his campaign against Verdun.

In the last days of June the British, French and Belgians began a systematic bombardment of the German defenses that extended from Verdun all the way to the North Sea. This bombardment was especially violent along the section north and south of the Somme, where the British were opposite the German lines. The heavy artillery of the British and French demolished the works of the enemy in this section, and on July 1 the forward movement began. The allies captured all the German first line trenches over a front of twenty-five miles. Within fifteen days fifteen villages and about 25,000 prisoners were taken.

After the first impetus of the drive had spent itself there was a period of quiet with both sides preparing for the next phase of the battle. On September 3 the Anglo-French forces struck again, the British at this time making use of a new war device, the armored tank. When the battle died down, in November, the allies had recaptured about 120 square miles of territory. The Germans are estimated to have lost 700,000 in killed, wounded and prisoners; the allies, 675,000. General Haig asserted the battle was an allied victory because it had relieved the pressure on Verdun, kept the Germans from withdrawing forces to the east against Russia (see below) and served to diminish the German manpower.

The Second Russian Offensive. Russia devoted its energy during the first months of 1916 to increasing and training its armies, and supplying them with arms and ammunition. There were several engagements on the southern part of the line held by the Russians before June, and on the third of that month the Russian forces under General Brussiloff began an extensive forward movement which swept the country from the

Pripet River on the north to Rumania on the south. The crownland of Bukowina was occupied, Lemberg, in Galicia, was threatened, and the advance column of the invaders reached the Carpathian Mountains. Several important towns fell into the hands of the Russians, and they took a large number of prisoners. The drive had spent itself by August, but it helped the French, British and Italians by keeping the Central Powers busy on both the east and the west fronts. Russia lost hundreds and thousands of its best troops in the fighting of 1914–1916, and was being menaced from within by corrupt officials and traitors. The sequel to this was the betrayal of Rumania, which entered the war on August 27 (see below).

Italian Reverses and Victories. In May the Austrians began an offensive against Italy for the purpose of disrupting allied plans for a summer campaign, and in the hope of putting the Italians out of the war by a conquest of Northern Italy. After a month of strenuous fighting the Austrians recovered 270 square miles of their own territory and conquered 230 square miles of Italian soil. The Italians lost heavily in men and material, but they offered strong resistance and definitely checked the offensive, besides inflicting heavy losses on the enemy. Russia's attack on Galicia and Bukowina, which forced Austria to withdraw troops from the Italian front, was a great factor in saving Italy from further invasion.

Two weeks after Russia launched the Austrian campaign, General Cadorna, commander of the Italians, began a vigorous counter-offensive with a new army of 500,000 men. During the last week of June the Austrians began to retreat on the Trentino front, where the Italian offensive proceeded vigorously throughout July. On August 4, five weeks after the Anglo-French attack on the Somme, Cadorna opened a vigorous attack along the Isonzo front, with the city of Goritz as the objective point. This place was protected by hills and mountains bristling with guns, but the Italians carried everything before them in their impetuous onslaught, and on August 9 triumphantly entered the city with King Victor Emmanuel at their head. The tide of battle then turned southward to the Carso plateau, which lay a strong barrier between the Italian army and the coveted city of Triest. Here progress was made only at the expenditure of well-nigh superhuman efforts.

The Tragedy of Rumania. The Rumanians began an invasion of Transylvania (in Hungary) immediately after the declaration of war against Austria-Hungary. During September they conquered about one-fourth of Transylvania and captured nearly 7,000 prisoners. The Rumanian staff confidently expected that General Sarrail, the allied commander in Macedonia, would keep the Bulgarians from attacking, and that Russia would take care of the Austro-German forces on the Russian front. Rumania itself was left unprotected, a rash proceeding that brought about a speedy collapse of the new ally.

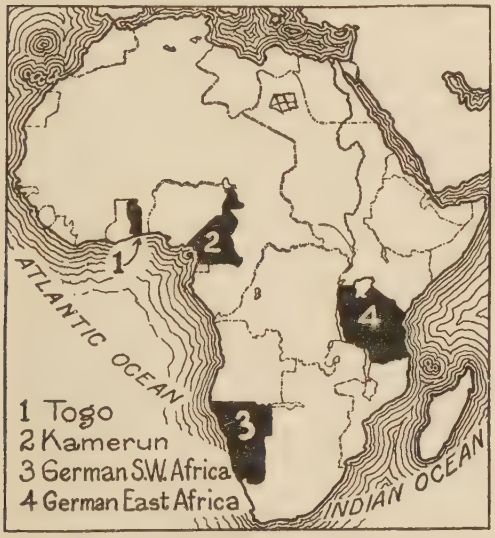
On September 2 a Bulgarian force invaded the Rumanian Dobrudja. Subsequently, the Germans under General von Falkenhayn trapped the Rumanian forces in the mountains of Transylvania, and invaded Rumania itself, and Field Marshal von Mackensen on December 6, after a series of brilliant victories, entered the city of Bucharest. The net results of the fighting from November 15 to December 6 were the rout of the Roumanian army, the capture of 80,000 prisoners and the conquest of the greater part of Wallachia (Southern Rumania). Lines of communication with Constantinople were opened, and large stores of supplies fell into the hands of the Central Powers, giving them additional means for carrying on the conflict.

It was subsequently revealed that chief blame for Rumania's plight must be placed on several of Russia's government officials, notably Premier Stürmer, a reactionary and a Pro-German. He had been instrumental in persuading Rumania to come into the war at a time when Germany could best cope with the situation, and had kept back promised Russian troops from Rumania when Bulgaria took the offensive and when Von Mackensen attacked. Through his intrigues needed supplies had been withheld when the Rumanians were sending desperate pleas for help, and before any operations began Rumania's plans were in the hands of the German officials. For these and other crimes Stürmer was indicted at the time of the Russian revolution; he was placed in prison, where he died, in September, 1917.

The War in Asia. In January, 1916, a Russian army under Grand Duke Nicholas invaded Turkish Armenia, drove back the Turkish forces in disorder, and on February 16 entered the fortified city of Erzerum, capturing over 320 guns and a great store of

supplies. In the spring Trebizond was captured, and in July the city of Erzingan, an important strategic center, 110 miles west of Erzerum, was taken. Elsewhere in Western Asia, however, the struggle did not go so well with the allies. General Townshend's British forces, besieged in Kut-el-Amara (see above), were starved into submission and surrendered on April 28, 1916. The force was diminished by fighting and hardship to fewer than 9,000 men, and the expedition was regarded by the English as a grave mistake. Russian expeditions against the Bagdad Railway also failed.

Allied Victories in Africa. At the beginning of 1916 only two colonies remained to Germany, Kamerun and German East Africa. Kamerun was completely overrun by Belgian,



AFRICAN COLONIES LOST BY GERMANY

British and French troops in January, and in February a powerful Boer army from South Africa, under the command of Jan Christian Smuts, invaded German East Africa. This army, in coöperation with British and Belgian troops, had conquered the greater part of the colony by the close of the year.

The War on the Sea. Early in the war German commerce was driven from the seas, British naval supremacy having saved the situation for the allies. The main German fleets did not attempt to dispute this supremacy, but remained at their bases at Kiel and Wilhelmshaven, protected by great fields of submarine mines and the strong fortifications of Helgoland. Several German cruisers, however, did great damage to allied shipping before they were destroyed. Among these were the *Emden* and the *Königsberg*. The former cruised the Indian and the South Pacific oceans for three months, but were finally destroyed near Java by an Australian cruiser, on November 9, 1914. The Königsberg also had a successful career before its destruction on the coast of German East Africa.

The German Far East Squadron of five powerful cruisers, after defeating a smaller British fleet in November, off the coast of Chile, was itself defeated on December 8 off the Falkland Islands. Another important engagement occurred on August 28, in the bight of Helgoland, when a British fleet, accompanied by torpedo-boat destroyers, was led into action by Sir David Beatty. Three German armored cruisers and two destroyers were sunk. German raiders at various times bombarded English coast towns, and were somewhat successful in eluding the vigilance of British warships. On the other hand, Germany's hope of weakening England by striking terror into the hearts of the civilian population of these towns was quite unsuccessful.

The allies lost a good many ships through mines as the war continued, and a few German cruisers were still menacing allied shipping when a new form of naval warfare, the submarine, began to threaten the allies. In February, 1915, Germany announced that its submarines would destroy any merchant vessels venturing into the waters surrounding Great Britain and Ireland. Great Britain retaliated by declaring a virtual blockade of all Germany, and from that time on the submarine and the blockade engaged in a desperate fight to the finish. The importance of Germany's decision to use the underseas boat against merchant vessels was not at that time fully realized. It was destined to have far-reaching effects; in fact, it brought about Germany's downfall.

On May 31, 1916, occurred the only battle of the war in which the main fleets of Germany and England participated. It was fought in an arm of the North Sea—the Skaggerak—about fifty miles off Jutland. The British fleet was in command of Sir John Jellicoe but the division which bore the brunt of the battle was commanded by Vice-Admiral Beatty. The German fleet consisted of five battle cruisers, seventeen dreadnoughts,

eight predreadnoughts and several fast light cruisers and destroyer flotillas. In the British fleet there were six battle cruisers, four fast battleships, several fast light cruisers and destroyers, and twenty-five dreadnoughts. The Germans claimed that their high-seas fleet was cruising about in the hope that it might meet and give battle to the British fleet. The latter was on one of its periodical cruises in the North Sea.

In the afternoon, Vice-Admiral Beatty, who was in advance of the main force of the grand fleet, became aware of the presence of the Germans, and after maneuvering for position, opened fire simultaneously with the enemy. The battle lasted well into the night, without decisive results at the time. Losses on both sides were heavy, with the British suffering the more severely in number of ships destroyed. They admitted the loss of fourteen vessels and 5,613 men; the Germans, eleven ships and 3,966 men. However, the German ships retired to their base and the main fleet did not venture out again during the war. It was afterwards disclosed by a German naval authority that misty weather and skilful seamanship alone saved the German fleet from overwhelming defeat, and that the battle convinced the German command that it was impossible to wrest from the British their control of the sea through battles of this nature. From that standpoint the British won a victory, though they suffered heavier losses than their enemy.

Effects of Submarine Warfare. Once the German submarine warfare was launched, complications with neutral nations developed. In May, 1915, the Cunard liner *Lusitania* was torpedoed without warning off the coast of Ireland, while on its voyage from New York to Liverpool. About 1,150 persons lost their lives, including 114 Americans. The Germans considered this a justifiable act of reprisal because of the blockade, which was keeping food and other necessities out of Germany, but it was generally regarded as a violation of international law and of the laws of humanity, and aroused feelings of horror throughout the civilized world.

Of the neutral nations, the United States was the most powerful and the one whose good will was most needed by the belligerents. The sinking of the *Lusitania* brought to a climax certain diplomatic correspondence which had been passing between the United States and Germany since the announcement of the submarine campaign, and was the occasion of a series of notes from President Wilson in which he insisted on Germany's respecting the rights of neutrals on the seas. Other sinkings followed, however, and though the President apparently secured from Germany a promise to abstain from torpedoing merchant vessels without warning, unrestricted submarine warfare was announced as a deliberate policy early in 1917 (see below). The heavy losses inflicted on allied shipping by the submarines put naval experts on their mettle, and a vigorous anti-submarine campaign caused the destruction or capture of large numbers of undersea boats.

Events of 1917. The allies suffered a tremendous blow in 1917 in the collapse of Russia, but this was offset by a great diplomatic triumph, the entrance of the United States into the war. America's action profoundly impressed the Central and South American nations, many of which declared war on Germany or broke off diplomatic relations. Siam and China, in Asia, and Liberia, in Africa, also associated themselves with the allies, as did Greece, in Europe. The ever-widening circle of German opponents showed the extent of the feeling against submarine warfare and the ruthlessness of German warfare on land. Heartrending stories of the treatment of conquered peoples and reports of Turkish massacres of Armenians and Syrians added fuel to the flames of resentment that seemed to sweep around the world. Notwithstanding the powerful coalition against the Central Powers, their armies held their own in the fateful year of 1917, and they nearly put Italy out of the war. War declarations of the year were as follows:

United States, on Germany	Apr. 6
Cuba, on Germany	Apr. 8
Panama, on Germany	Apr. 9
Greece, on Germany	July 22
Siam, on Germany	July 22
Liberia, on Germany	Aug. 7
China, on Germany	Aug. 14
Brazil, on Germany	Oct. 26
United States, on Austria-Hungary	Dec. 7
Panama, on Austria-Hungary	Dec. 10

The following nations severed diplomatic relations with Germany:

Bolivia	Honduras
Costa Rica	Nicaragua
Ecuador	Peru
Guatemala	Santo Domingo
Haiti	Uruguay

Military Events in the West. *British and French Drives.* In January, 1917, after a period of intensive preparation, the British renewed the battle on the Somme front, gradually pushed the German line back, and by March 13 had come within artillery range of Bapaume, one of the main objectives of the Somme campaign. About this time indications pointed toward an extensive withdrawal of the German forces to a strong defensive position which came to be known as the "Hindenburg line." By March 15 the retreat was well under way, and General Haig thereupon ordered a general advance along the entire front from Arras to Roye. At the same time the French began an advance from Roye to Rheims. Stiff fighting ensued for several days, the Germans counter-attacking at intervals, but steadily moving back before the violent onslaughts of British and French. Something like 1,000 square miles of desolated territory were redeemed by the German withdrawal.

On April 9 a new offensive on a gigantic scale was begun, with the British striking for Lens, the center of the coal district, and for Saint Quentin. Among the spectacular feats of this drive was the capture of Vimy Ridge by the interpid Canadians. This ridge was the key position to Lens, which was thus placed in a dangerous "pocket." The British pushed their way to within a few hundred yards of Saint Quentin, but failed to take the city. By June the battle had become a deadlock, but the British had achieved one of their chief aims, the wearing down of German man-power and material. In counter-attacks during the Battle of Arras the Germans suffered very heavy losses.

Interest in the progress of the war was shifted to Belgium in June, where the British line at Ypres needed attention. It was in the form of a huge *S* written backwards, Ypres occupying the upper curve. In the lower curve was Messines Ridge, which was held by the Germans. If the Ypres salient were wrested from the allies the way to Calais would be opened to the Germans, and the precarious condition of the British line was a source of great anxiety. For over fifteen months preparations to capture the ridge were under way. Under the heights a series of mines ten miles in extent was placed, and these were exploded on June 7 by electric contact. The blast blew off the top of the hills and destroyed scores of trenches and dugouts, while the artillery played on the exposed positions with unparalled violence. English, Irish, Australian and New Zealand infantrymen then swept forward, capturing the entire ridge and assaulting the German positions in the rear. When this phase of the battle ended the British had captured defenses on a front five miles wide and three deep, straightened their line, taken 7,000 prisoners and removed the threat to Calais.

Meanwhile, on April 16, the French, under General Pétain, began an assault on the Aisne River, between Soissons and Rheims. Fighting continued at intervals until November, when the French held positions dominating the Aisne and Ailette valleys, including the celebrated Chemin des Dames (Road of the Ladies), capture of which was one of the great French exploits of the war. Forty square miles of territory were liberated, and 12,000 prisoners taken, besides immense quantities of war material.

Fighting in Belgian Flanders was renewed by the British in July and continued to the end of the year. They hoped to drive the Germans from the Belgian coast, to force them to abandon their submarine bases at Ostend and Zeebrugge, and to encircle the important industrial city of Lille. The ultimate objects of the campaign were not realized, but the new positions gained held out promise of better success for the 1918 campaign. Late in November the French battleground came again into prominence when General Byng made a spectacular attack in the direction of Cambrai, and at heavy cost approached within two miles of that German-held city. However, by a quick counter-stroke Hindenburg's armies pushed their foe back two miles, and the effect of Byng's dash was nullified.

The Collapse of Russia. In spite of disorganization and political upheaval in Russian official circles, a Russian army began an offensive in Baltic Russia, in January, with the capture of Mitau, capital of Courland, the chief objective. The movement was a failure, and in March the long threatening revolution broke out in Petrograd. The czar was forced to abdicate, and a democratic provisional government was set up.

The revolutionists declared their loyalty to the allied cause, but were unable to hold their armies together as a fighting machine. German propaganda further weakened the

morale of Russia's troops, and it was soon evident that whatever turn the revolution took the country was practically out of the war and could not longer be counted on for support, even to the extent of continuing to menace Germany and keeping German regiments on the eastern front. Under Kerensky as Premier an attempt was made to establish a republic on a moderate Socialistic basis, but the radical elements rapidly organized, and in November, headed by Lenine and Trotzky, they overturned the Kerensky régime. These radicals were known as the *Bolsheviki,* meaning *those of the majority* (for further details see RUSSIA and the article BOLSHEVIKI).

The Bolsheviki promised the people bread and peace, and immediately set about negotiating a treaty with the Central Powers which should put Russia out of the war. The peace envoys met at Brest-Litovsk, German eastern headquarters, once an important city in Western Russia, but since 1915 in ruins.

Perhaps never before had the world witnessed so one-sided a peace conference between nations which did not meet as victor and vanquished. Germany, through a legislative majority, had proclaimed its desire for peace without annexations or indemnities. At the conference, however, the German military leaders declared that Russia could not include German-occupied territory in peace discussions. This was a vital point in the negotiations, for during the summer and fall, while Russia was in political and industrial chaos, German armies had taken Riga and the provinces of Esthonia, Livonia and Courland, and had gained triumphs in the south where the Ukraine had declared for self-government.

Trotzky, in charge of the Russian peace delegation, unable to change the German purpose, withdrew his fellow members from Brest-Litovsk, declaring he would make no peace, yet would not continue the war. Subsequently, Lenine signed a humiliating peace, which deprived Russia of all occupied territory (for details, see RUSSIA). Even after the agreement was signed German armies continued to push farther into Russia, and Petrograd was threatened. The Bolshevik government thereupon moved to Moscow.

Rumania Crushed. At the close of 1916 Southern Rumania (Wallachia) was in the possession of the Central Powers, but the northern district, Moldavia, was not yet subdued. In December the Teutonic forces began an offensive to complete their conquest of the country, and by the middle of February, 1917, they had under control all but a few sections in the north. The withdrawal of Russia from the war, later in the year, forced Rumania to make a reluctant peace. In March, 1918, the humiliating Treaty of Bucharest was signed, by which Rumania was forced to cede the Dobrudja as far as the Danube River to the Central Powers, and to grant economic advantages, such as the control of railways, wheat harvests and oil wells, for an indefinite period. The treaty made the country practically a vassal state of Germany.

Italy's Disaster. The account of the Italian campaign on a preceding page stated that the armies of Victor Emmanuel captured Goritz in August, 1916. In the spring and summer of 1917 they continued their attacks, winning brilliant victories and approaching to within ten miles of Triest. Then in the fall of 1917, when the allies were feeling the effects of the Russian collapse, they were disheartened by news of disaster from the Italian front.

After a campaign of subtle propaganda, during which Germany led several Italian divisions to believe peace to be near, Austro-Hungarian troops with the aid of strong German forces opened in offensive (October 21). Not only did Italy lose the ground that had been won the year before, but its enemy penetrated Italy itself and was not stopped until the Piave River was reached. About 1,000 square miles of Italian territory were thus laid under German domination. Venice was threatened; its works of art were removed, its wonderful buildings protected as much as possible, and the inhabitants sent farther south. Had not the lowlands around the mouth of the Piave been flooded to arrest the progress of the enemy, the city might have been attacked successfully.

Allied Victories in Asia. Though allied prospects were dimmed by the Russian, Rumanian and Italian disasters, the year 1917 was favorable for them in Asia. Early in the year the British began a campaign in Mesopotamia to offset the unsuccessful expedition of General Townshend. Under General Sir Stanley Maude British troops worked their way up the Tigris, forced the Turks to abandon Kut-el-Amara (February) and in March triumphantly entered the city

of Bagdad. The evacuation of the historic city was a blow to Turkish prestige, and with its fall the valuable cultivated fields of Babylonia came into British control. By fall the British had advanced a hundred miles north of Bagdad and had secured control of the Bagdad-Samara railway. In November they suffered a disaster in the death of General Maude.

Palestine was also the scene of allied victories. Early in February, 1917, the British under General Sir Edmund Allenby captured Rafa, on the Sinai Peninsula, and began an advance on Gaza and Beersheba. Not until autumn were these towns captured, but after the fall of Gaza, in November, progress was rapid. On December 10 Jerusalem was captured, and the Holy City was in Christian hands for the first time in four centuries.

Greece. Grecian neutrality was abandoned in June, 1917, when the king abdicated, and the pro-ally statesman Venizelos formed a new Ministry. King Constantine was succeeded by his second son, Alexander, as the crown prince was suspected of pro-German tendencies. In this diplomatic upheaval the entente had an active part. The allied army in Macedonia was now in a position to advance, as there was no longer danger of an attack in the rear on the part of Constantine.

The United States Enters the War. Throughout the year of 1916 President Wilson had been seeking by diplomatic correspondence to persuade Germany to modify its submarine warfare, which the President held was in direct violation of international law. What he sought in particular was Germany's promise that merchant and passenger vessels should not be attacked without warning. The Germanic allies were the only belligerents causing the death of noncombatants on the high seas, and feeling in the United States was stirred to a high pitch when sinkings continued in spite of apparent yielding to the President's demand. Then, early in 1917, came a crisis.

On January 31 Count von Bernstorff, the German ambassador at Washington, delivered a note to the State Department announcing the inauguration of unrestricted submarine warfare on the first day of February. The note stated that from that date all neutral and enemy vessels encountered anywhere on the seas would be sunk without warning, but that the United States would be permitted weekly to send one ship in each direction across the Atlantic, if it were properly marked for identification and followed a designated course. Germany thus renounced a former promise to America to respect the rights of nations upon the high seas.

President Wilson thereupon severed diplomatic relations with Germany, and on February 3 Bernstorff was handed his passports. The two nations were not officially at war until April 6, but in the meantime the United States became an armed belligerent. On February 26 President Wilson asked Congress for authority to arm American merchant vessels. The House passed a bill granting such authority, but a filibuster in the Senate by a small group of opposition Senators prevented its passage before the expiration of the session of Congress, on March 4. The President, however, found authority for arming ships in an old act of 1819, and so nullified the efforts of the opposition.

On March 12 the policy of armed neutrality was announced. Meanwhile the country had been stirred to increased indignation by the publication of a note from the German Foreign Minister to the German ambassador in Mexico, directing the latter to propose an alliance with Mexico against the United States should America and Germany become enemies. A similar suggestion to Japan was proposed.

The policy of arming merchant vessels did not meet the situation, and sinkings continued. A large section of the population and press felt that actual participation in the war was the only honorable course, a feeling shared by the President, who called the Sixty-fifth Congress in special session on April 2. Before a joint assembly of both houses he read an eloquent war message in which he asked that Congress recognize a state of war between the United States and Germany. On April 4 the war resolution passed the Senate by a vote of 86 to 6, and on April 6 it passed the House by a vote of 373 to 50. The resolution was worded as follows:

> Whereas, the Imperial German Government has committed repeated acts of war against the Government and the people of the United States of America: Therefore be it:
>
> Resolved by the Senate and House of Representatives of the United States of America in Congress assembled:

That the state of war between the United States and the Imperial German Government which has thus been thrust upon the United States is hereby formally declared; and that the President be, and he is thereby, authorized and directed to employ the naval and military forces of the United States and the resources of the Government to carry on war against the Imperial German Government; and to bring the conflict to a successful termination all of the resources of the country are hereby pledged by the Congress of the United States.

Chronological Survey of Events. The following is a list of events showing the relation of the United States to the war from its outbreak in 1914 to the war resolution of 1917. It shows that there were numerous hostile acts on the part of Germany and its agents from an early date:

1914

Aug. 3—Congress appropriates $250,000 for emergency relief of Americans in Europe.

Aug. 4—America issues proclamation of neutrality.

Aug. 5—President Wilson offers to mediate between belligerent nations; appeals for peace.

Aug. 5—German-American cable cut.

Aug. 14—German kaiser tells United States Ambassador Gerard that he is unable to accept president's offer of mediation; says neutrality of Belgium had to be violated on strategical grounds.

Aug. 15—Congress appropriates $2,500,000 for use of American diplomatic and consular officers abroad to relieve American citizens.

Aug. 16—United States cruisers Tennessee and North Carolina arrive at Falmouth, England, with money for relief of stranded Americans.

Aug. 18—President Wilson appeals to citizens of United States to observe strict neutrality towards all belligerents.

Aug. 26—Belgium protests to the United States against throwing of bombs from German aircraft on Antwerp.

Sept. 11—Congress appropriates $1,000,000 for expenses of American embassies and legations abroad representing various belligerents.

Sept. 16—Mission from Belgium appeals to President Wilson against alleged atrocities committed by Germans.

Oct. 22—American emergency war tax—increase in internal revenue tax—becomes a law.

Nov. 1—Rockefeller Foundation announces that it will help Belgium relief work.

Nov. 16—United States launch from cruiser Tennessee fired upon by Turks at Smyrna.

Nov. 25—Allies ask United States to help enforce neutrality of Ecuador and Colombia against German intrigue.

Dec. 24—Admiral von Tirpitz, chief of German navy, outlines possibilities of ruthless submarine war and asks: "What will America say?"

1915

Jan. 14—Buchthorne plant of John A. Roebling, Trenton, N. J., engaged in work for allies, burns; loss $1,500,000. Incendiarism suspected.

Jan. 28—German auxiliary cruiser Prinz Eitel Friedrich sinks American ship William P. Frye and brings its crew to American port.

Feb. 2—Attempt to blow up international railroad bridges between Vanceboro, Me., and New Brunswick, Canada, confessed by Werner Horn, German captain.

Feb. 4—Germany proclaims waters surrounding Great Britain and Ireland to be war zone and says that on and after Feb. 18 "every enemy merchant ship found in said zone will be destroyed, it not always being possible to avert dangers that threaten crews and passengers. Even neutral ships are exposed to danger in war zone, as in view of misuse of neutral flags ordered Jan. 31 by British government, and of accidents of naval war it cannot always be avoided to strike even neutral ships in attacks that are directed at enemy ships."

Feb. 10—United States replies to German proclamation, warning Germany the destruction of American vessels or loss of American life is an indefensible violation of neutral rights and that the United States will hold Germany to strict accountability for all such acts.

Feb. 16—Germany protests to the United States against British blockade; justifies its submarine campaign on ground of "starvation methods" of allies; says it is not the intention of Germany to destroy neutral lives and neutral property.

Feb. 19—American freight ship Evelyn, carrying cotton from New York to Bremen, strikes mine in North sea; one life lost.

Feb. 19—Great Britain explains that American flag was raised on liner Lusitania at request of American passengers and that this practice has been recognized heretofore as permissible in an emergency.

Feb. 20—United States sends identical notes to Great Britain and Germany asking that neutral vessels be not endangered; that no floating mines be turned loose; that no anchored mines be placed in high seas; that submarines be not used to attack merchantmen; that no neutral flag be used on belligerent ships; that the nations agree that United States send foodstuffs to American agents in Germany for distribution to noncombatants.

Feb. 22—American ship Carib sunk at mouth of Ems river, Germany.

March 1—Germany replies that it would be willing not to use floating mines; refuses to give up anchored mines; sets forth submarine is not to attack merchant ships except to visit and search; sets forth enemy is not to use neutral flag nor to arm its merchantmen; demands that raw material be passed in addition to foodstuffs, the plan for the distribution of which it says "is generally acceptable."

March 1—France and Great Britain announce that in view of indiscriminate sinking of ships by Germany, allies will hold, detain and take into port ships carrying goods of presumed enemy origin, destination and ownership.

March 3—Congress creates coast guard and naval reserve.

March 6—Five men killed in two explosions in Du Pont powder plant at Haskell, N. H., manufacturing for allies.

March 8—Charles Ruroede pleads guilty in New York to obtaining false passports for German reservists.

March 15—Great Britain replies to American note of Feb. 20 that it cannot consider acting on it since Germany will not abandon mine laying or submarine warfare. It protests against German acts affecting civilians in Belgium and northern France; mine laying on high seas; mistreatment of British prisoners of war; sinking of British merchantmen; bombarding of defenseless towns, and air raids.

March 27—American merchantman Falaba, 3,011 tons sunk by submarine; one American life lost.

March 30—United States issues protest against interference with its trade.

March 31—The United States presents to Germany a claim for $228,059 for sinking of the William P. Frye.

April 1—Five men killed in explosion in plant of Equitable Powder company, Alton, Ill.

April 2—American ship Greenbrier sunk by a mine immediately after leaving Bremen for New York.

April 4—Germany protests that food shipments are not reaching her; since American war materials can reach only one group of belligerents she suggests an embargo on all war shipments.

April 5—Germany offers to put the case of the William P. Frye up to prize court, to which the United States objects.

April 21—United States replies to German protest against sending munitions that it would not be neutral if it abandoned trade.

April 22—German embassy at Washington publishes warning in New York newspapers against passengers sailing on Lusitania.

April 28—American oil tank steamer Cushing, bound from Rotterdam to Philadelphia attacked near Antwerp by German aeroplane, which throws three bombs.

May 1—American oil tank steamer Gulflight torpedoed by German submarine without warning off Scilly islands; three Americans dead.

May 7—Cunard liner Lusitania, from New York to Liverpool, torpedoed off Irish coast by German submarine without warning; 114 American lives lost.

May 12—Guncotton storehouse of Anderson Chemical company, Wallington, N. J., wrecked by explosion; three dead.

May 13—United States sends first protest to Germany on sinking of Lusitania as not compatible with international law.

May 25—American ship Nebraskan, chartered to British White Star Line, carrying coal for United States navy, damaged by a German submarine near Ireland.

May 28—Germany defends sinking of Lusitania, asserting that it carried munitions and traveled too fast to be warned.

June 9—United States again asks Germany, in second Lusitania note, for assurances that American lives and property will be safeguarded in future.

June 12—Bernhard Dernburg, German propaganda leader in America, who justified sinking of Lusitania in newspaper interview, departs for Germany via Norway because of his unpopularity.

June 28—British mule ship Armenian sunk by German submarine; twenty Americans dead.

June 29—Austria protests to the United States against shipment of munitions to allies; admits America's legal right, but insists action is not neutral, because part of belligerents are cut off from supply.

July 2—Frank Holt (Erich Muenter) tries to blow up capitol at Washington as protest against making munitions; next day tries to kill J. P. Morgan; commits suicide in jail, July 6.

July 7—Incendiary fire discovered in hold of transatlantic steamer Minnehaha.

July 8—Germany promises that American ships in the prosecution of legal voyages will not be hindered; American lives on neutral vessels shall not be placed in jeopardy.

July 9—Cunard line steamship Orduna, carrying Americans, attacked off Irish coast by submarine with torpedo and shells without warning; uninjured.

July 12—Germany declares attack on steamer Nebraskan was due to misunderstanding; expresses regret and promises compensation.

July 13—Public disclosures prove attempts by German sympathizers in United States to destroy by bombs the following transatlantic vessels: Bankdale, Touraine, Devon City, Lord Erne, Cressington, Samland, Lord Devonshire, Kirkoswald and Strathtay.

July 13—Mixing building of United Safety Powder company at Jefferson, Ky., wrecked; three killed.

July 21—United States, in third Lusitania note, asks Germany to make reparation for lives lost and disavow act; declares that such another attack will be considered deliberately unfriendly.

July 25—American ship Leelanaw, from Archangel to Belfast, loaded with flax, torpedoed off the Orkneys.

July 31—British steamer Iberian, 5,223 tons, sunk; three Americans killed by shell fire; three wounded.

Aug. 12—United States replies to Austria-Hungary that it is not violating neutrality in making munitions.

Aug. 16—Five killed in explosion of Sinnamahoning (Pa.) plant of Ætna Explosives company.

Aug. 19—White Star liner Arabic, 15,801 tons, torpedoed; two Americans killed.

Aug. 24—German Ambassador Bernstorff gives out interview in Washington saying loss of American lives on Arabic was "contrary to our intention."

Aug. 29—Two Du Pont powder mills at Wilmington, Del., destroyed; two killed.

Aug. 30—Shrapnel plant of E. J. Dodd company, Baltimore, Md., burned.

Aug. 30—Through discovery of letters carried by James J. F. Archibald and seized by English at Falmouth, United States learns that Dr. Constantin T. Dumba, ambassador of Austria-Hungary to United States, writes his superiors that he has plans under way to "disorganize and hold up for months, if not entirely prevent, manufacture of munitions in Bethlehem, Pa., and middle west, which, in opinion of German attache, is of great importance and amply outweighs expenditure of money involved." Other disclosures also made.

Sept. 1—Germany promises that "liners will not be sunk by our submarines without warning and without safety to lives of noncombatants, provided that liners do not try to escape or offer resistance."

Sept. 4—Steamship Hesperian, 6,124 tons, torpedoed: one American killed.

Sept 9—President Wilson asks recall of Dr. Dumba, Austro-Hungarian ambassador, on ground of Archibald disclosures.

Sept. 19—Germany, after negotiation in case of the William P. Frye, agrees that amount of damage shall be settled by conference of experts and says submarines have been ordered not to destroy American merchantmen carrying conditional contraband.

Sept. 21—British house of commons makes public thirty-four letters and documents found on Archibald; two from German attache Boy-Ed, and one from Von Papen, German captain.

Sept. 24—Austria-Hungary reiterates protests against America's making of munitions.

Oct. 12—Edith Cavell, English nurse, executed at Brussels in spite of protest of American legation.

Oct. 24—United States secret service men arrest Robert Fay, lieutenant in German army, and others in New York on charge of conspiring to destroy munitions' ships by bombs; Fay, Walter Scholz and Paul Daeche found guilty May 8, 1916.

Nov. 7—Ancona, 8,210 tons, sunk by Austrian submarine; twenty-four Americans killed.

Nov. 10—Machine shop of Bethlehem Steel company, South Bethlehem, Pa., burned with loss of $5,000,000.

Dec. 3—United States asks Germany to recall Capt. Boy-Ed, military attache, and Capt. Von Papen for "improper activities in military and naval matters." Boy-Ed said to have handled $750,000 for chartering ships to supply German raiders.

Dec. 3—United States steamer Communipaw sunk.

Dec. 4—Karl Buenz, Adolf Hochmeister, George Koetter and Joseph Poppinghaus of the Hamburg-American line convicted of conspiracy to deceive and defraud the United States by supplying German cruisers at sea.

Dec. 5—American oil tank ship Petrolite attacked.

Dec. 6—United States sends Austria note of protest against sinking of Ancona.

Dec. 7—President Wilson advocates preparedness in message to congress.

Dec. 30—British liner Persia sunk by submarine; Robert N. McNeely, newly appointed consul of United States at Aden, Arabia, killed; also Homer R. Salisbury, American missionary.

1916

Jan. 6—Brindisi, Italian steamship, strikes mine; one American killed.

Jan. 7—Germany in official note promises submarine shall insure safety of crews and passengers; if accident prevents this, will make reparation; offers to pay indemnity for Americans lost on Lusitania.

Jan. 27—President Wilson begins speaking tour through country to advocate large volunteer army with reserve of 500,000.

Feb. 10—Austria and Germany announce to United States that after Feb. 29 they will treat armed merchantmen as belligerent ships.

Feb. 17—Lusitania case regarded as settled; Germany agrees to warn liners, but objects to armament.

Feb. 24—President Wilson, in letter to Senator Stone, declares rights of Americans cannot be abridged or denied and that order to Americans to keep off armed merchantmen would be such denial.

March 3—Gore resolution declaring sinking of armed merchant vessel by submarine with loss of American lives cause for war, lost in senate.

March 7—House refuses to consider McLemore resolution to warn all American citizens against traveling in armed ships.

March 9—One American injured in torpedoing of Norwegian bark Silvius by German submarine.

March 16—Dutch liner Tubantia, with Americans aboard, torpedoed without warning. British merchantman Berwindale, with four Americans aboard, torpedoed.

March 24—French channel steamer Sussex torpedoed without warning; Americans injured. British merchantman Englishman torpedoed; one American killed.

March 27—United States asks Germany if her submarine sank the Sussex.

March 27—British merchantman Manchester Engineer, with Americans aboard, sunk without warning by torpedo.

March 28—United States asks Germany if her submarine sank the Englishman.

March 29—United States asks Germany if her submarine sank Manchester Engineer.

March 31—Horst von der Goltz, alleged German spy, discloses plot to invade Canada, destroy Welland canal; admits enlisting Germans in Baltimore and elsewhere.

April 1—United States asks Germany if her submarine sank British steamer Eagle Point, with Americans aboard on March 28.
April 1—United States asks Germany if her submarine sank British steamer Berwindale, with Americans aboard on March 16.
April 11—Germany replies Berwindale tried to escape submarine; Englishman tried to escape; Manchester Engineer not established; Eagle Point tried to escape; Sussex sinking not yet traced to submarine.
April 18—United States furnishes proof that German submarine sank Sussex; threatens breach of diplomatic relations if similar sinking is repeated.
April 19—President Wilson goes before congress to explain details of submarine controversy and warning to break relations.
April 19—Government officers in New York seize papers of Wolf von Igel, former secretary to Capt. von Papen; German ambassador asks for papers on ground of diplomatic immunity; government offers to give him any that he can identify as belonging to embassy.
May 4—Germany announces submarine commanders have received orders not to sink ships without warning and saving human lives, unless they offer resistance or attempt to escape.
May 9—Germany in detailed statement declares all ships encountered by submarines will be dealt with according to international law; if neutral is damaged Germany will make reparation without recourse to a prize court or submit to international arbitration.
May 13—New York holds first preparedness demonstration in country with 125,683 men in line.
May 16—Batavier V., Dutch liner, sunk by mine; one American killed.
June 3—Chicago preparedness demonstration with 130,214 men in line.
June 3—Chamberlain army bill providing for volunteer army and federalized national guard, becomes law.
June 12—Congress appropriates $200,000,000 for training national guard.
July 1—Act drafting national guard into regular army becomes a law.
July 31—Dutch liner, Koenigin Wilhelmina, with American aboard, torpedoed.
Aug. 29—Act increasing navy becomes law; adds 157 ships; ten battle ships; six battle cruisers; ten scout cruisers; fifty destroyers; nine fleet submarines; fifty-nine regular submarines.
Sept. 2—British merchantman Kelvina, with twenty-eight Americans aboard, sunk by mine or torpedo.
Sept. 7—Shipping board to encourage naval auxiliary formed.
Sept. 8—Emergency revenue act becomes law; provides for special munitions tax, etc.
Oct. 7—German war submarine U-53 puts in at Newport, R. I.; on Oct. 8 it sinks Strathdene, British; West Point, British; Stephano, British; Bloomersdyk, Dutch, and Christian Knudsen, Norwegian. United States destroyers rescue survivors. Stephano had many Americans abroad, returning from vacation in Newfoundland.
Oct. 19—Aulania, British merchantman, sunk without warning in English channel; twenty-one Americans aboard.
Oct. 28—American ship Lanao sunk off Portsmouth by submarine.
Oct. 28—British steamer Marina sunk without warning by German submarine; six Americans killed.
Nov. 7—American steamer Columbian shelled and sunk by German submarine off Spanish coast.
Nov. 26—American merchantman Chemung sunk off Andalusia.
Nov. 26—Germany refuses to give United States Consul Pike right to cross Germany from Warnemunde to Switzerland.
Nov. 29—United States sends protest against deportation of Belgians to Germany.
Dec. 4—Italian steamship Palermo, with twenty-five Americans aboard, sunk.
Dec. 14—British ship Russian, with seventeen Americans aboard, sunk.

1917

Jan. 11—Franz Bopp, German consul-general at San Francisco, and Baron George W. von Brincken, convicted of conspiring to injure American shipping, munitions, plants, etc., and sentenced to two years' imprisonment.
Jan. 19—British steamer Yarrowdale sunk; seventy-two American seamen taken as prisoners to Germany.
Jan. 22—President Wilson addresses senate on a world league for peace; proposes a peace without victory.
Jan. 31—Germany gives United States Ambassador Gerard in Berlin six hours' notice of opening of ruthless submarine warfare; declares ships will be sunk within specified zone around British Isles whether neutral or not if submarine has not time to warn or allow men to escape.
Feb. 3—In view of Germany's summary breaking of pledges regarding safety of neutrals in submarine zone President Wilson breaks diplomatic relations and gives Ambassador Bernstorff his passports. The latter was given safe conduct to Germany.
Feb. 3—American merchantman Housatonic sunk by submarine.
Feb. 13—American merchantman Lyman M. Law sunk by German submarine.
Feb. 21—Publication is made of intercepted note from German Foreign Secretary Zimmermann to German minister in Mexico City, dated Jan. 19, 1917, proposing alliance between Mexico, Japan and Germany and suggesting Mexico be paid by annexation of American southwestern states for co-operation with Germany.
Feb. 25—Spanish embassy in Berlin informed men from Yarrowdale had been released. Men reached Switzerland March 11; complained of cruel treatment as prisoners of war.
Feb. 26—British steamer Laconia sunk; five Americans killed.

March 2—American merchantman Algonquin sunk by German submarine with shell fire and bombs; crew escapes.
March 8—Dr. Chakraberty, prominent in Indian independence movement, admits getting $60,000 in New York from Wolf von Igel, German agent, to start trouble in India.
March 9—President Wilson orders navy department to arm American merchant vessels.
March 9—President Wilson calls congress to meet in extraordinary session April 16.
March 12—United States serves formal notice on neutrals of severance of relations with Germany and asks neutral support.
March 14—China informs United States it has severed diplomatic relations with Germany. American influence accomplished this.
March 17—First armed American liner, St. Louis, leaves New York, carrying naval gun crew under decision of president allowing American ships to arm.
March 18—Three American ships sunk by submarine—City of Memphis, Illinois and Vigilancia; fifteen members of Vigilancia crew lost.
March 21—President Wilson calls congress to meet April 2, instead of April 16.
March 22—American oil ship Healdton, with cargo worth $2,150,000, sunk by submarine; seven Americans killed.
March 22—Immense mass meeting in New York demands action against Germany; 12,000 pledge loyalty.
March 22—Capt. Franz Rintelen of German navy and two others convicted in New York of conspiracy to interfere with shipment of munitions.
March 24—President Wilson orders Brand Whitlock, United States minister, and all consuls in Belgium to leave.
March 25—President Wilson signs bill to increase navy personnel by 26,000 men to 87,000.
March 25—War department calls units of national guard in nine states and District of Columbia; 13,000 men.
March 26—War department calls 25,000 men.
March 30—The federal government calls on all government employes, totaling 500,000, to aid secret service department in detecting spies and plots.
April 1—American steamer Aztec, 3,722 tons, value $500,000, sunk off Brest; twenty-eight men, including Boatswain's Mate Eopulucci, of United States naval guard, dead.
April 2—Six Germans convicted in New York of conspiracy to destroy munitions ships by bombs, among them the chief engineer of the German steamship Friedrich der Grosse, and four assistant engineers.
April 2—The 65th congress meets in special session and President Wilson asks it to declare that a state of war exists between the United States and Germany.
April 4—American merchantman Missourian, left Genoa April 4, 4,981 tons, sunk without warning in Mediterranean.
April 4—Senate votes war resolution.
April 5—Disclosures made showing that an office for the issuance of fraudulent American passports to German reservists was maintained by Hans von Wedell and others under the supervision of Capt. von Papen and with the assistance of Wolf von Igel.
April 5—Belgian relief ship Trevier, 2,991 tons, carrying food to Belgium, torpedoed.
April 6—House votes war resolution.
April 6—War measure signed by President Wilson. Formal war proclamation is issued.

The Nation at War. When war was imminent the administration called for volunteers to join the regular army, the navy and the marine corps, but the decision to enter the war on a major scale brought with it the necessity of a new military policy. The President therefore asked Congress to pass a selective draft law. Such a bill passed both Houses, and was signed by the President on May 18. On June 5 about 10,000,000 men between the ages of twenty-one and thirty-one were registered, and selections for a new national army were soon under way.

The government established sixteen training camps for drilling the national guard (state militia) units, sixteen for training the army to be selected from conscription, and eighteen great aviation fields. On September 2, the first detachments of 600,000 selected men were sent to the training grounds; in May, 1918, the second contingent of 583,000 was called. The regulars were mobilized earlier.

In the meantime Major-General John J. Pershing, who had served during the preceding year in Mexico, was appointed commander in chief of American forces to be sent to France. On June 27 the first contingent reached French soil, and Pershing was raised to the rank of general.

It was announced that Secretary of War Baker was prepared to have 2,000,000 soldiers in France by the autumn of 1918. Secretary Baker visited France in March and April, 1918, to acquaint himself with the actual conditions. In May Congress provided ample appropriations for an army of between 3,000,000 and 5,000,000 men, should such a host be needed.

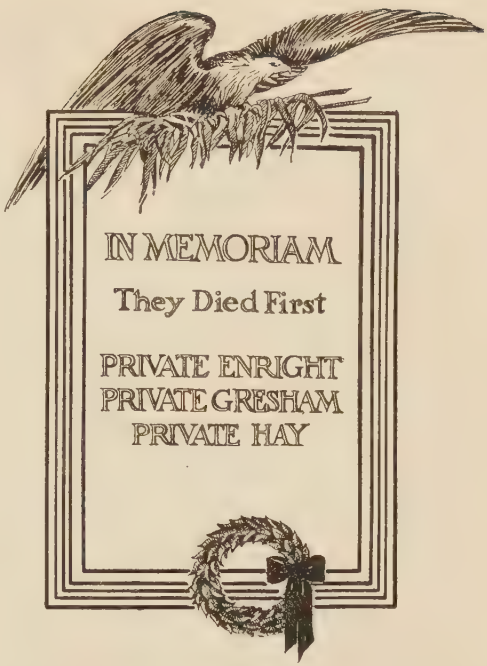
First American Losses. In October, 1917, the American nation was informed that after months of training its first soldiers had been sent to the battle front. The location selected for them, while requiring confidence and technical skill, was in a comparatively quiet sector almost on the Franco-German

border east of Nancy. On November 3 they had a spirited encounter with German troops in a trench-raiding enterprise, in which the latter were repulsed. Three Americans—Privates Thomas F. Enright, Pittsburgh, Pa., James B. Gresham, Evansville, Ind., and Merle D. Hay, Glidden, Iowa—were killed, eleven were wounded, and a like number were captured by the enemy. The number of Americans whose training was completed increased rapidly from that time, and many divisions were in the battle line when the great German offensive began in March, 1918.

First Losses at Sea. Before the end of 1917 the ability of the government to send soldiers to France was limited only by the transport service. In September the United States commandeered and placed in commission sixteen passenger vessels belonging to Germany and Austria which had been interned in American waters, thus materially adding to the allied overseas fleet. Among these was the *Vaterland,* the largest vessel afloat; this boat was renamed the *Leviathan.* The carrying capacity of the sixteen was about 50,000 soldiers. Before the end of the year troop movements were greatly accelerated and until February 6 not an American soldier had been lost enroute to France through submarine-infested waters. On that day the steamer *Tuscania,* one of many ships in care of a British convoy, was sunk by a torpedo off the north coast of Ireland. There were 2,179 United States troops of the 32nd Division aboard and all except 171 were saved.

"Liberty" Loans. Upon entry into the war hitherto unheard-of appropriations of money were required to maintain a vast army and greatly increased navy. Before many months had elapsed the United States government was spending over $1,000,000,000 per month, including loans to allied nations. To meet such expenditures income taxes were increased, many internal revenue taxes were more than doubled, many special taxes were levied and the nation began to borrow money from its citizens.

These bonds were appropriately called "Liberty" bonds. The first loan was called for June 15, 1917, and $2,000,000,000 was solicited. It was more than 50 per cent oversubscribed, the amount realized being $3,035,226,850; the interest rate was 3½ per cent. The second loan was called for October 28, for $3,000,000,000. This, too, was as heavily oversubscribed, the amount realized being $4,617,532,300; the interest rate was 4 per cent. The third loan was for $3,000,000,000, called for May 4, 1918. It realized



Private Enright, Private Gresham, Private Hay, we salute you! Yours have become imperishable names upon the Roll of Honor, for to you belongs the proud distinction of having been the first of this nation's forces in France to make the supreme sacrifice.

While cannon boomed a grim accompaniment, the profound thanks of a great sister nation went out to you from the lips of that French commanding officer who officiated at your simple burial—

"In the name of the —th division, in the name of the French army, and in the name of France I bid farewell to Private Enright, Private Gresham and Private Hay of the American army.

"Of their own free will they had left a prosperous and happy country to come over here. They knew war was continuing in Europe; they knew that the forces fighting for honor, love of justice, and civilization were still checked by the long-prepared forces serving the powers of brutal domination, oppression and barbarity. They knew that efforts were still necessary. They wished to give up their generous hearts and they had not forgotten old historical memories, while others forgot more recent ones. * * * We will therefore ask that the mortal remains of these young men be left here, left with us forever. We inscribe on the tombs, 'Here lie the first soldiers of the republic of the United States to fall on the soil of France for liberty and justice.' The passerby will stop and uncover his head. Travelers and men of heart will go out of their way to come here to pay their respective tributes.

"Private Enright! Private Gresham! Private Hay! In the name of France, I thank you. God receive your souls! Farewell!"

about $4,000,000,000, and was one-third oversubscribed. The interest was 4¼ per cent. In September the fourth loan of $6,000,000,000 was called, this, too, being oversubscribed. After hostilities ceased a fifth loan, appropriately called the "Victory Loan," calling for $4,500,000,000, was oversubscribed.

In addition to these major loans, the government inaugurated during the same period the sale of "thrift" stamps of 25 cents face value, to be exchanged in quantities for $5 bonds, called "baby" bonds, to mature in five years.

Aircraft Program. One of the earliest appropriations of Congress was for $640,000,000 to build factories for the production of flying machines for war purposes and to manufacture them in large quantities. A superior engine was produced and it was named the "Liberty" motor. The public was led to expect production on a large scale by January, 1918, but in this department of war activity the results achieved in a year were exceedingly disappointing. Several thousand machines were built during that time for students in the national aviation camps, but until the late summer of 1918 there were no battle, bombing or observation 'planes in Europe. Hundreds of American aviators in France were provided with machines of British and French manufacture.

Work of the Navy. Immediately following the declaration of war the American navy was ready for active duty. In May a large number of torpedo-boat destroyers, submarine chasers and vessels of larger size were sent into European waters to oppose with the British and French the submarine menace. In command of the American contingent was Vice-Admiral Sims. Between 1914 and 1918 the navy was increased over one hundred per cent in number of vessels, though not in tonnage, and the personnel was more than trebled.

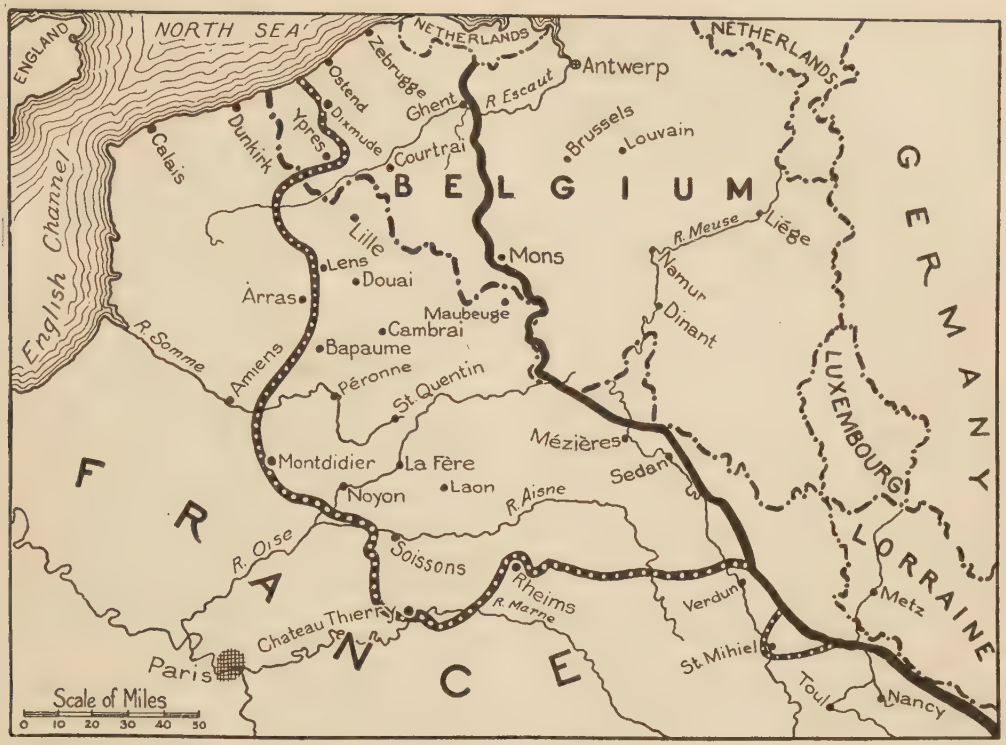
Early Campaigns of 1918. Germany prepared for a supreme offensive in the spring, and the entente allies prepared for it as best they could, but knew not at what points between the North Sea and Switzerland to expect it. That it would prove the supreme test of the war was deemed certain, for Germany had moved scores of divisions of troops from the Russian front to face its foes in France. The strength of the Central Powers in France was estimated at 220 divisons, or about 2,500,000 fighting men, with great reserve forces to fill ranks thinned in battle. In the approaching crisis the American General Pershing placed his entire command and all supplies he possessed at the disposal of the allies. General Ferdinand Foch of the French Army was placed in supreme command of the unified allied forces, and he was given the title of marshal.

On March 21 the German offensive began on a 50-mile front in Northeastern France, of which Amiens was practically the center and one important objective. German troops in close formation, assisted by thousands of great guns, rolled in great waves westward and by April 9th the British, who had been selected as the first Teuton opponents, were pushed back in places about twenty-five miles. It was the German plan to separate the British and French armies, then to render the former non-effective. Afterwards the French could be brought to terms.

Early in April the British elected to make a stand. They had retired in good order and the armies were intact. The Germans, who had advanced in solid formation, suffered immense losses, and were forced for a time to suspend their assaults to reform their divisions. On April 21, with "backs to the wall," the British succeeded in halting the progress of their enemy in a battle which it is said astounded the German high command. In Belgium Hindenburg's forces had taken Messines Ridge and Kemmel Hill, two very important heights, but they could at the time go no farther. Another period of time elapsed for a second realignment of forces. Amiens was yet nine miles west of the foremost German lines, and Ypres was still three miles within the allied lines.

On May 27 the Germans renewed their offensive on a scale nearly as ambitious as that of March 21, on a front of forty-eight miles. Over 800,000 men were hurled against the allies, with an equal number in reserve. The main offensive was directed towards Paris; in four days twenty-six miles were gained, and the Germans were again on the Marne River on June 1, from which they had been driven in 1914. On June 9 another offensive gained a few more miles; it was then definitely halted.

Attack on Zeebrugge. In April, 1918, a detail of ships from the British navy made a spectacular attack on the heavily-protected submarine bases of the Germans at Ostend



THE FINAL BATTLE LINE

The dotted line represents the Western limits reached in the tremendous German drive which began on March 21 and ended the middle of July. Thereafter Marshal Foch and his allied armies were masters of the situation and their enemy forces were driven steadily and persistently back toward Germany. The solid, heavy line indicates the battle front on the day the armistice was signed. The broken lines are territorial boundary lines.

and Zeebrugge. At the latter point, particularly, the Englishmen scored heavily. They sank three obsolete vessels filled with cement in the harbor entrance, destroyed a section of the mole and severely damaged a number of German light war vessels and much of the military defenses. The defenders were completely surprised. It was the most daring exploit of any naval contingent in the war. On May 10, the feat was repeated at Ostend, with heroism equally great; an obsolete warship cement filled, was sunk in the harbor mouth.

The Last Days. On June 1 the Germans were within forty-six miles of Paris. The speed of their gigantic drive was slackened, and in succeeding efforts they gained a total of only fifteen miles, which brought them within thirty-one miles of the French capital. At this point the forces of the United States began to make their presence felt. The first thrilling move by a wholly American contingent was at Belleau Wood, where United States marines fought with such valor and success that the grateful French republic renamed the spot the "Wood of the American Marines." The encounter which finally stopped the German advance and which marked the turning point of the war was the exploit of American marines, in the second Battle of the Marne on July 21, when they threw back the advancing enemy at Chateau Thierry. Together the Americans and the French pushed this advantage so rapidly that before the end of the month the German Crown Prince fled from the Marne salient and withdrew his army as rapidly as possible.

The above successes immediately stiffened the allied lines, and what had been for three months a desperate defense was turned into an offensive movement from the North Sea to Switzerland which the German high command could not slacken. Mile by mile, day after day, the German forces retreated, but offered vicious rear-guard engagements in which many thousand machine guns were employed to stop the advancing allies.

In September a new American man-power bill became effective, the selective draft having been extended to men from thirty-one to forty-five. Foch knew that he had unlimited reserves to fall back upon, and the offensive against the Germans was pressed with vigor. One by one the cities of France which had been dominated by the Germans for four years were retaken. Soissons, Cambrai, Saint Quentin, Noyon, Lens and Lille again became French, and the famous "Hindenburg line" was permanently broken.

On September 13 the American First Army corps were assigned the task of driving the Germans from the southern end of the battle line. In two days they cleared the Saint Mihiel salient and later attempted the most difficult task of driving the foe from the hilly Argonne Forest region, north of Verdun. The attention of the world was turned more particularly to the spectacular retreat of the Germans farther north, but the American task in the Argonne region, one of the stiffest fighting problems of the entire war, was a highly important adventure. Metz was the objective of the Americans, and had not the surrender of the Germans occurred on November 11, the Americans would eventually have reached it. On the day before the armistice was signed they entered Sedan, the historic city which had witnessed the disastrous battle which imposed a German peace upon France in 1871.

In Belgium, meanwhile, Field Marshal Haig and King Albert were driving the Germans out of the country that had first felt the brunt of the war. By November 9 (see accompanying map), the Germans had not only abandoned the coast, but retired from the whole country west of Ghent. Had not the Germans secured an armistice on November 11 their armies would have suffered an overwhelming defeat, a fact the new German government admitted in August, 1919. Their position was rendered doubly precarious by the downfall of their three allies.

Collapse of Bulgaria. In the middle of September an allied army made up of French, British, Italian, Greek, Serbian, Czecho-Slovak and Jugo-Slavic forces under General Franchet d'Esperey, began a vigorous offensive against the Bulgarian forces in Macedonia. The Bulgars were soon in full retreat, and when Sofia itself was threatened the Bulgarian government asked for an armistice. On September 30 fighting ceased, the Bulgars having surrendered unconditionally. The capitulation of Bulgaria opened the way for the liberation of Serbia, Montenegro and Rumania, destroyed Germany's *Mittel Europa* plans, cut off direct communication with Turkey and paved the way for the collapse of both Austria and Germany.

Surrender of Turkey. After the capture of Jerusalem, at the close of 1917, General Allenby began extensive preparations for a campaign to put Turkey out of the war. In the later operations he was assisted by Arabian forces, as the kingdom of Hedjaz (see ARABIA) had declared its independence of Turkey in November, 1916, and had become a valued member of the entente. In September British and Arabs began an advance in Mesopotamia and Palestine, which came rapidly to a climax. Toward the close of the month the British reached the Sea of Galilee, while the Arabs carried everything before them east of the Jordan. In October Damascus fell; later in the month Aleppo, the Turko-German base for the armies in Asia Minor, was captured, and about the same time the Turks were completely defeated along the Tigris, and communications with Mosul were cut.

In view of the breakdown of their forces, the Turks could no longer hold out, and asked for an armistice. General Townshend, who had been a prisoner since the surrender of Kut-el-Amara, bore the note asking for terms, which he delivered to the allied commander of the Aegean fleet. Negotiations were held on the island of Lesbos, and terms were signed on October 30. Among the armistice provisions was the opening of the Dardanelles to the allies.

Austria-Hungary Capitulates. The closing weeks of the war saw Italy retrieving the great disaster of 1917. In June the Austrians began an attack on the Asiago Plateau and along the Piave River, but the movement failed. On October 24 the Italians, with help of a few divisions of their allies, began a major offensive against the Austrians, which developed into one of the most brilliant victories of the war. Trent, Udine and Trieste were occupied, and the Austro-Hungarian army was routed.

Austria-Hungary asked for an armistice on October 31, and terms were accepted on November 1. As one of these terms granted

the allies the right to occupy any Austrian territory desired, the armistice made an invasion of Germany from the south a near possibility. The Germans, who were losing their own fight, saw the hopelessness of continuing the struggle, and they, too, accepted drastic armistice terms.

Germany Asks for Peace. As soon as the surrender of Bulgaria became known in Germany there was a political upheaval, Chancellor von Hertling resigning, and Prince Max of Baden, a moderate man of democratic tendencies, succeeding him on October 2. A coalition Ministry was formed, in which the Social Democrats were represented by Scheidemann and Bauer. On October 5 President Wilson was requested to take steps for the restoration of peace. A series of notes between Germany and the United States followed, in which President Wilson obtained sweeping concessions from the German government, such as promises to cease attacks on merchant ships, to evacuate all occupied territory and to accept those principles which had been laid down in various war messages. On November 5 the allied and associated governments authorized Marshal Foch to state the terms on which they would enter into an armistice. German envoys were at once sent to French headquarters, and on November 11 they signed the following allied demands:

Evacuation within fourteen days of Belgium, France, Alsace-Lorraine and Luxemburg.

Surrender of 5,000 guns, half field and half artillery; 25,000 machine guns; 3,000 flame throwers, and 1,500 airplanes.

Surrender of 5,000 locomotives, 150,000 cars, 50,000 wagons and 10,000 motor lorries.

Surrender of railways of Alsace-Lorraine and stores of coal and iron there.

Immediate return of allied prisoners, but German prisoners not to be returned before peace was signed.

Evacuation of west bank of the Rhine, the allies to hold the crossing of the river at Coblenz, Cologne and Mayence for a twenty-mile radius.

The east bank of the Rhine to become a neutral zone and to be evacuated in nineteen days.

German troops to retire at once from any occupied territory which before the war belonged to Russia, Rumania and Turkey.

The allied force to have access to this evacuated territory.

Abrogation of Brest-Litovsk and Rumanian treaties.

Evacuation of all German forces in East Africa within one month.

Surrender of all German submarines.

Surrender of seventy-four warships, including fifty destroyers, ten battle-ships, six battle cruisers and eight light cruisers.

Restitution for damage done by German armies in invaded territories.

Return of cash taken from the national bank of Belgium.

Return of gold taken from Russia and Rumania.

Summary of the War. The chief events of the War of the Nations are summarized below for ready reference.

1914

June 28—Archduke Francis Ferdinand and wife assassinated in Sarajevo, Bosnia.
July 28—Austria-Hungary declares war on Serbia.
Aug. 1—Germany declares war on Russia; general mobilization begun.
Aug. 4—State of war between Great Britain and Germany is declared; Germany declares war on Belgium.
Aug. 8—Germans capture Liege.
Aug. 20—German troops enter Brussels.
Aug. 23—Japan declares war on Germany; Russians victorious in East Prussia.
Aug. 26—Large part of Louvain destroyed by Germans.
Aug. 28—British win naval battle near Helgoland.
Aug. 29—Germans inflict heavy defeat on Russians at Allenstein; Germans occupy Amiens.
Sept. 1—Germans win decisive victory at Tannenberg, East Prussia; cross the Marne in France.
Sept. 2—Lemberg captured by Russians; seat of French government transferred from Paris to Bordeaux.
Sept. 5—England, France and Russia sign compact not to conclude peace separately.
Sept. 6—Allies win battle of Marne.
Sept. 7—Germans retreat from the Marne; capture Maubeuge.
Sept. 7-10—Germans retreat to the Aisne.
Sept. 14—Battle of Aisne begins; pursuit by allies halted.
Sept. 15—First battle of Soissons fought.
Sept. 18—Germans bombard Reims and damage cathedral.
Sept. 19—Battle of Aisne develops into continuous trench fighting.
Sept. 20—Russians capture Jaroslau and begin siege of Przemysl.
Sept. 22—British cruisers Cressy, Aboukir and Hogue torpedoed and sunk in the North sea.
Oct. 9-10—Germans capture Antwerp.
Oct. 12.—Germans capture Ghent.
Oct. 20—Fighting along the Yser river begins.
Oct. 29—Turkey begins war on Russia.
Nov. 1—British cruisers Good Hope and Monmouth sunk off Coast of Chile.
Nov. 7—Tsingtao captured by Japanese.
Nov. 9—German cruiser Emden destroyed.
Dec. 8—German cruisers sunk near Falkland islands by British fleet.
Dec. 9—French government officials return to Paris.

Dec. 14—Belgrade recaptured by Serbians.
Dec. 17—Britain formally assumes a protectorate over Egypt.
Dec. 25—Italy occupies Avlona, Albania.

1915

Jan. 1—British battleship Formidable sunk.
Jan. 11—Heavy fighting northeast of Soissons.
Jan. 24—British win naval battle in North sea, sinking the German cruiser Bluecher and damaging two other cruisers.
Feb. 11—Germans evacuate Lodz.
Feb. 12—Germans drive Russians from positions in East Prussia, taking 26,000 prisoners.
Feb. 19—British and French fleets bombard Dardenelles forts.
March 1—Premier Asquith announces blockade by allies of all German, Austrian and Turkish ports.
March 10—Battle of Neuve Chapelle begins.
March 14—German cruiser Dresden sunk.
March 18—British battleships Irresistible and Ocean and French battleship Bouvet sunk in Dardanelles strait.
March 22—Fortress of Przemysl surrenders to Russians.
April 23—Germans force way across Ypres canal at Steenstraate and Het Sas.
May 2—Austro-Hungarian and German forces repulse Russians along the entire front of Malatow, Gorlice, Gromik and north of these places in West Galicia.
May 7—Liner Lusitania torpedoed and sunk by German submarine.
May 23—Italy formally declares war on Austria and orders mobilization of army.
June 3—Przemysl recaptured by Germans and Austrians.
June 22—Germans and Austrians capture Lemberg.
July 3—Tolmino falls into hands of Italians.
July 29—Warsaw evacuated; Lublin captured by Austrians.
Aug. 2—Germans occupy Mitau.
Aug. 3-9—Battle of Hooge.
Aug. 4—Germans occupy Warsaw.
Aug. 5—Ivangorod taken by Germans.
Aug. 6—British land at Suvla bay, Gallipoli.
Aug. 17—Germans capture Kovno.
Aug. 19-20—Germans take Novo Georgievsk.
Aug. 26—Germans take Brest-Litovsk.
Sept. 2—Germans capture Grodno.
Sept. 5—Grand Duke Nicholas sent to the Caucasus.
Sept. 8—Russians stop Germans at Tarnopol.
Sept. 19—Germans capture Vilna.
Sept. 20—Austrians and Germans begin drive on Serbia.
Sept. 25-30—Battle of the Champagne.
Oct. 9-10—Austro-Germans capture Belgrade.
Oct. 12—Edith Cavell executed by Germans.
Oct. 13—Bulgaria declares war on Serbia.
Oct. 22—Bulgarians occupy Uskub.
Nov. 7—Italian liner Ancona sunk.
Nov. 22—British victory near Bagdad.
Nov. 30—Bulgarians take Prizrend.
Dec. 1—British retreat from Bagdad.
Dec. 8-9—Allies defeated in Macedonia.
Dec. 15—Sir John Douglas Haig succeeds Sir John French.
Dec. 27-30—Heavy Russian offensive in Galicia and Bessarabia.
Dec. 30—Liner Persia sunk in Mediterranean.

1916

Jan. 6—Russians capture Czartorysk.
Jan. 8—British troops at Kut-el-Amara surrounded.
Jan. 9—British evacuate Gallipoli peninsula.
Jan. 10—Austrians capture Mount Loveen in Montenegro; predreadnought King Edward VII sunk.
Jan. 13—Cetinje, capital of Montenegro, captured by Austrians.
Jan. 23—Scutari, capital of Albania, captured by Austrians.
Feb. 15—Erzerum captured by the Russians.
Feb. 21—Germans under crown prince begin attack on Verdun defenses.
Feb. 26—Germans capture Fort Douaumont; French transport La Provence sunk.
March 2—Bitlis captured by Russians.
March 16—Admiral von Tirpitz resigns.
March 24—Sussex torpedoed and sunk.
April 5-7—Battle of St. Eloi.
April 17—Trebizond captured by Russians.
April 18—President Wilson sends final note to Germany.
April 19—President Wilson explains diplomatic situation in speech before congress in joint session.
April 24—Insurrection in Dublin.
April 29—British force at Kut-el-Amara surrenders to the Turks.
April 30—Irish insurrection suppressed.
May 3—Several leaders of Irish revolt executed.
May 15—Austrians begin offensive against Italians in Trentino.
May 31—Great naval battle off Danish coast.
June 3—Germans assail British at Ypres; Russians under Gen. Brussiloff begin successful offensive.
June 5—Lord Kitchener lost with cruiser Hampshire.
June 6—Italians stop enemy in Trentino.
June 11—Russians capture Dubno.
June 18—Russians capture Czernowitz.
June 25—Gen. Brussiloff's army completes possession of Bukowina.
July 1—Battle of Somme begins.
July 25—Erzingan captured by the Russians.
July 26—Pozieres taken by British.
July 27—British take Delville wood; Serbs begin attack on Bulgars in Macedonia.
Aug. 2—French take Fleury.
Aug. 3—Sir Roger Casement executed for treason.
Aug. 5—British win victory north of Pozieres.
Aug. 9—Italians take Goritz by assault.
Aug. 15—Russians capture Jablonitza.
Aug. 18—Serbs capture Florina from Bulgars.
Aug. 24—French take Maurepas.
Aug. 27—Italy declares war against Germany.
Aug. 28—Roumania declares war against Austria-Hungary.
Aug. 30—Roumanians take Kronstadt in Transylvania; Bulgars seize Drama.

Sept. 2—Roumanians take Orsova and Hermannstadt.
Sept. 3—Allies take Guillemont and Clery.
Sept. 7—Germans capture Tutrakan.
Sept. 9—French recapture Fort Douaumont.
Sept. 10—German-Bulgar forces take Silistria.
Sept. 15—British take Flers, Martinpuich and Courcelette; French reach outskirts of Rancourt.
Sept. 17—French take Vermandovillers and Berny.
Sept. 25—British capture Morval and Les Boeufs.
Sept. 26—French and British take Combles; British take Thiepval and Guedecourt.
Sept. 28—Venizelos proclaims provisional government in Greece; to aid allies.
Sept. 30—Germans defeat Roumanians at Hermannstadt.
Oct. 8—Germans recapture Kronstadt from Roumanians.
Oct. 11—Germans defeat Roumanians in Alt valley and begin invasion of Roumania.
Oct. 13—Italians win victory on Carso plateau.
Oct. 23—Germans capture Constanza.
Oct. 24—Germans take Predeal.
Oct. 25—Germans capture Vulcan pass.
Nov. 3—French reoccupy Fort Vaux.
Nov. 12—French take all of Saillisel.
Nov. 13—British win battle of Ancre.
Nov. 19—Monastir taken by Serbs, French and Italians.
Nov. 24—Germans capture Orsova and Turnu-Severin.
Nov. 25—Venizelist provisional government in Greece declares war on Germany.
Nov. 28—Seat of Roumanian government removed from Bukharest to Jassy.
Dec. 3—Battle of Argesu won by Germans.
Dec. 5—British cabinet resigns.
Dec. 6—Bukharest occupied by German forces.
Dec. 10—New British cabinet formed with David Lloyd George at its head.
Dec. 11—Italian battleship Regina Margherita sunk.
Dec. 12—Germany proposes peace negotiations.
Dec. 15—French recapture Vacherauville, Louvemont and Fort Hardaumont.
Dec. 18—President Wilson sends note to belligerent nations asking them to make known their peace terms and to neutral nations suggesting that they support America's action.
Dec. 28—Germany replies to President Wilson saying a direct exchange of views would be best way to bring about peace—gives no terms.
Dec. 29—Scandinavian countries express sympathy with President Wilson's suggestions.
Dec. 30—Allies make joint reply to Germany's peace proposal, rejecting it as a war maneuver.

1917

Jan. 2—Germans complete conquest of Dobrogea.
Jan. 7—Russians take offensive along Sereth river.
Jan. 9—British battleship Cornwallis sunk.
Jan. 10—Allies make joint reply to President Wilson and give their peace terms.
Jan. 11—German government issues note commenting on entente's reply of Dec. 30.
Jan. 13—Arthur Balfour, British secretary for foreign affairs, sends note commenting on President Wilson's peace suggestions.
Jan. 14—Galatz under bombardment; German attacks on Riga front fail.
Jan. 15—Germans defeated on the Sereth river.
Jan. 17—British advance on both sides of Ancre creek.
Jan. 20—Germany defends deportations of Belgians; Russians routed at Nanesti.
Jan. 22—President Wilson addresses United States senate on subject of world peace and the establishment of a league of nations.
Jan. 23—Battle between British and German destroyers in North sea.
Jan. 25-30—Fighting on Hill 304 and Mort Homme hill near Verdun.
Jan. 28—Russians win battle of Monte Cansci; British auxiliary steamer Laurentic sunk.
Jan. 31—Ambassador Count von Bernstorff hands note to Secretary Lansing in Washington announcing the inauguration by Germany of an unrestricted submarine warfare on Feb. 1; Germany proclaims boundaries of blockade zones.
Feb. 1—Germany begins unrestricted submarine warfare.
Feb. 3—President Wilson orders that Ambassador Count von Bernstorff be handed his passports, directs the withdrawal of Ambassador James W. Gerard and all American consuls from Germany and announces his action in a speech before congress; suggests to neutral countries that they follow America's example.
Feb. 3—American steamer Housatonic torpedoed and sunk.
Feb. 5—President Wilson forbids transfer of American ships to foreign registry; German ships interned at Manila seized.
Feb. 7—British capture Grandcourt; German ships interned in American ports found crippled by crews.
Feb. 8—Germany detains Ambassador Gerard in Berlin; liner California torpedoed and sunk with loss of forty-one lives.
Feb. 13—Ambassador Bernstorff sails for Germany via Halifax and Norway.
Feb. 14—Scandinavian countries protest against Germany's sea warfare.
Feb. 15—Germans under crown prince take a mile and a half of French trenches between Reims and Verdun.
Feb. 17—British troops capture enemy positions along a front of two miles on both sides of the Ancre.
Feb. 18—Entrance to New York harbor closed by steel net.
Feb. 24—British take village of Petit Miraumont and advance on a front of a mile; Germans withdraw under cover of fog.
Feb. 25—"Hindenburg retreat" from Somme sector in full progress; British win at Sannaiyat on the Tigris; British take Serre and Butte de Warlencourt.

Feb. 26—President Wilson appears before congress and asks authority to supply merchant ships with defensive arms and to employ other methods to protect American ships and citizens; British capture Kut-el-Amara.

Feb. 27—British take Gonnecourt.

Feb. 28—The Associated Press reveals German plot to bring Mexico and Japan in alliance against the United States; letter from the German secretary of foreign affairs, Dr. Alfred Zimmermann, to the German minister to Mexico suggesting the plan, published.

March 1—President Wilson, at request of senate, confirms existence of German plot in Mexico; house grants president power to arm merchant ships.

March 2—Germany announces that on March 1 the final limit of grace for sailing vessels on the Atlantic expired; Russians capture Hamadan.

March 3—Foreign Secretary Zimmermann admits authenticity of letter to German minister to Mexico suggesting alliance against the United States.

March 6—British invade Palestine and capture Hebron; United States supreme court decides Appam case in favor of owners.

March 8—Count Ferdinand von Zeppelin dies; French regain trenches in Champagne.

March 9—President Wilson calls a special session of congress for April 16; issues orders for the arming of American merchant ships.

March 10—Belgian relief steamer Storstad torpedoed.

March 11—Successful revolution in Russia; British capture Bagdad; Ambassador Gerard reaches Havana.

March 12—French capture Hill 185 in Champagne; state department in Washington gives formal notice of arming of American ships; American steamer Algonquin sunk without warning by German submarine; China breaks relations with Germany.

March 14—German chancellor promises reforms to Prussian diet.

March 15—Czar Nicholas II. of Russia abdicates throne for himself and son. The action was forced.

March 16—Grand Duke Michael Alexandrovitch renounces assumption of supreme power in Russia; British take St. Pierre Vaast wood; American steamer Vigilancia torpedoed with loss of fifteen lives.

March 17—British take Bapaume; French take Roye; American ship City of Memphis sunk.

March 18—British and French take Peronne, Chaulnes, Nesle and Noyon; make ten mile gain on seventy mile front; Germans destroy everything in abandoned territory; American ship Illinois sunk by submarine.

March 19—American oil ship Healdton torpedoed with loss of a score of lives; French battleship Danton torpedoed with loss of 296 men; British and French continue advance; Germans say retreat is for strategic purposes.

March 20—French and British take a score of villages in their advance.

March 21—President Wilson calls extra session of congress to begin April 2 instead of April 16; "state of war" admitted to exist.

March 22—America recognizes new government in Russia.

March 23—French troops reach vicinity of St. Quentin.

March 24—Washington announces withdrawal of Minister Brand Whitlock and American relief workers from Belgium; constitutionalist party in Russia votes for republican form of government; Germany extends barred zone to Russian arctic waters.

March 25—President Wilson calls part of national guard in the east into the national service for policing purposes.

March 26—British defeat large force of Turks at Gaza, Palestine; President Wilson calls into federal service 20,000 guardsmen in eighteen central states.

March 27—British advance towards Cambrai; French approach La Fere.

March 29—Chancellor von Bethmann-Hollweg makes speech in reichstag saying that blame will be on America if war comes.

March 30—Foreign Secretary Zimmermann, in reichstag, explains his effort to embroil Mexico and Japan with the United States; German raider Seeadler sends captives to Rio Janeiro; President Wilson and cabinet decide hat war with Germany is the only honorable recourse left to the United States.

March 31—More national guard units mobilized in the United States.

April 1—The Aztec, an armed American steamer, sunk by submarine; Russian armies invade Turkey from Persia.

April 2—Special session of American congress opens; president in address asks that existence of a state of war with Germany be declared.

April 3—Russian relief steamer Trevier torpedoed.

April 4—Senate passes war resolution; American steamship Missourian sunk in Mediterranean.

April 5—Brazilian ship Parana sunk by submarine; British and Russian armies in Mesopotamia.

April 6—House passes war resolution; president signs resolution and issues war proclamation; all American naval forces mobilized; German vessels in American ports seized; Germans blow up their auxiliary cruiser Cormoran at Guam.

April 7—Cuba declares war on Germany; Panama declares that it will assist the United States in the defense of the Panama Canal.

April 8—Austria-Hungary announces break in relations with the United States.

April 9—Canadians take Vimy ridge in great British offensive north and south of Arras; Austrian ships interned in American harbors seized; Chile announces it will remain neutral.

April 10—Brazil breaks off relations with Germany; Argentine government says it will support the United States; Eddystone ammunition plant explosion kills 125 persons.
April 11—Costa Rica places its ports at disposal of the United States.
April 12—Bolivia breaks with Germany; Argentine ship Monte Protegido sunk by submarine.
April 13—Barred defense zones around American harbors proclaimed by president; Russian and German socialists dickering on peace terms; British drive Germans back on twelve-mile front near Loos.
April 14—House of representatives passes $7,000,000,000 war loan bill without opposition; Paraguay expresses sympathy with the United States in the war with Germany; Uruguay condemns German submarine warfare and expresses sympathy with the United States.
April 15—Great French offensive between Soissons and Reims begins; President Wilson issues proclamation warning traitors; British transports Cameronia and Arcadian sunk with heavy loss of life.
April 17—Senate passes war loan bill unanimously; British hospital ships Donegal and Lanfranc sunk.
April 18—Germans driven out of six villages between Soissons and Reims.
April 19—American liner Mongolia sinks German U-boat; Nicaragua indorses entry of United States into war with Germany.
April 20—"American day" in Britain; special services held in St. Paul's cathedral; Berlin admits retirement to "Hindenburg line" in face of allied attacks; two German destroyers sunk off Dover.
April 21—Turkey breaks off relations with the United States; Balfour mission arrives in the United States.
April 22—British mission arrives in Washington; Americans closing missions in Turkey; "United States day" celebrated in Paris.
April 23—British begin new attack on Arras front; British capture Samara.
April 24—Joffre-Viviani French mission arrives in America; President Wilson signs big bond act.
April 25—Joffre-Viviani mission given ovation in Washington; president appoints Elihu Root head of mission to visit Russia.
April 26—Britain withdraws shipping blacklist so far as concerns America.
April 28—Senate and house pass army draft bill; Guatemala severs relations with Germany; Secretary McAdoo announces that bond issues will be called "liberty loan" of 1917.
April 30—Argentine congress adopts resolution in favor of strict neutrality.
May 1—Strikes in munitions factories in Germany reported.
May 3—United States begins making large loans to allies.
May 4—American destroyers arrive in British waters and begin patrol work; Russian council of workmen and soldiers declares for peace without annexations or indemnities but sustains provisional government. British transport Transylvania sunk with loss of 413 lives.
May 5—Great Britain joins French in asking that American troops be sent to France at once.
May 6—International socialists conferring on peace in Stockholm.
May 9—Liberia ends relations with Germany.
May 10—Secretary Lansing says United States and allies will consider peace terms jointly.
May 11—Congress of Haiti refuses to declare war on Germany.
May 14—Espionage bill passes senate.
May 16—British government suggests two plans for settling Irish question.
May 17—First American Red Cross hospital unit arrives in England for service with the British in France; Honduras severs relations with Germany.
May 18—President Wilson orders the sending of a division of regulars to France under Maj-Gen. J. J. Pershing; issues proclamation fixing June 5 as date for the registry of men eligible for army service under draft law.
May 19—Nicaragua breaks off relations with Germany; Russian provisional government reorganized; President Wilson asks Herbert C. Hoover to take charge of food administration in America during the war.
May 20—German plot for world domination laid bare in Washington; two Chicago nurses killed by gun accident on ship bound for Europe.
May 21—Italian war mission arrives in America.
May 22—United States protests against holding of Americans in Germany; Russian peasants seize lands and burn houses.
May 23—American medical unit received by King George; United States refuses passports to Stockholm socialist conference; house passes war revenue bill calling for $1,870,000,000.
May 24—Rear-Admiral Wm. S. Sims appointed vice-admiral; plan of raising $100,000,000 for Red Cross announced.
May 25—German aircraft raid England killing seventy-six persons and injuring 174; President Wilson designates June 18-25 as Red Cross week.
May 26—Italians storm second Austrian line on Carso plateau.
May 27-29—Italian offensive on Carso plateau continues.
May 28—Minister of Finance Shingaroff says Russia faces financial ruin on account of workingmen's demands.
May 29—Brazilian deputies revoke declaration of neutrality.
May 31—Austrian parliament convened; many arrests made of persons opposing operation of conscription law; house defeats press censorship.
June 1—British airmen bombard Zeebrugge and Ostend; split in provisional government in Russia.
June 2—Root commission arrives in Russia.

June 3—British socialists urge peace without annexations.
June 5—Military registration day under selective draft law in the United States; approximately 10,000,000 men registered.
June 6—Lord Northcliffe appointed to represent Britain in America; British resume operations on Arras front.
June 7—British begin great offensive at Messines, storming Wytschaede ridge and exploding great mines.
June 8—Gen. Pershing with staff and clerical force reaches London; force of 100 American aviators reach France; Austrian officers enter Russian lines with peace offers; Germany breaks with republic of Haiti.
June 9—President Wilson's note to Russia outlining American war aims made public.
June 10—British gain more ground around Messines in Ypres region.
June 11—American tank steamer Petrolite torpedoed; British take German trench system on mile front east of Messines ridge.
June 12—King Constantine of Greece forced to abdicate his throne.
June 13—Gen. Pershing lands in France; German aeroplanes raid London, killing 157 persons and wounding 430.
June 14—King Constantine leaves Greece.
June 15—Blockade of Greece is lifted.
June 16—Italians capture Corno Cavento in the Trentino; Belgian war mission arrives in United States.
June 17—Two Zeppelins raid British coast; one burned; Londoners demand reprisals for air raids.
June 18—Italians advance northeast of Jamiano.
June 19—Vice-Admiral Sims appointed to take temporary charge of allied naval forces in Irish waters.
June 20—Canadians capture trenches before Lens.
June 22—House passes food control bill; Rumanian mission arrives in America; Elihu Root speaks to large gathering in Petrograd.
June 25—President Wilson appoints exports council; Canadians take German first line trenches in front of Lens.
June 26—Venizelos becomes prime minister of Greece; severe report on Mesopotamian mission issued in London.
June 27—American troops arrive in France; French cruiser Kleber sunk by mine; congress of soldiers' and workmen's delegates in Russia declare against a separate peace.
June 28—Brazil revokes neutrality; heavy British attacks near Lens; Rumanian mission arrives in Washington.
June 29—Greece severs relations with Germany and her allies.
June 30—Russians open new offensive in Galicia; eighty-seven German ships seized in American ports turned over to shipping board for operation.
July 1—Russians attack on eighteen-mile front in Galicia.
July 2—President promulgates rules for exemptions in draft; French victory in Czerny.
July 3—Russian drive at Brzezany begins; artillery battle in Ypres salient.
July 4—Germans offensive south of Laon fails; France celebrates July 4; American troops parade in Paris.
July 5—British attack near Ypres.
July 7—German air raid on London kills and wounds many; President Wilson announces export embargo.
July 8—German attack on the Chemin des Dames repulsed.
July 9—President Wilson proclaims mobilization of national guard.
July 11—Germans drive back British troops on the Belgian coast to the Yser, taking 1,250 prisoners; Italians occupy Dalino.
July 12—Chancellor von Bethmann-Hollweg resigns.
July 13—Reichstag refuses to consider war credits.
July 14—George Michaelis becomes German chancellor.
July 17—French take German first and second lines northwest of Verdun.
July 19—Finnish diet declares for independence.
July 20—Draft day in the United States; mutiny causes Russian defeat east of Lemberg.
July 22—Siam declares war on Germany.
July 23—Kerensky appeals to Russian army for support.
July 24—President Wilson accepts resignation of Gen. Goethals from shipping board; many units of Russian army refuse to fight, while the Germans sweep ahead.
July 25—Allied conference begins in Paris.
July 26—Death penalty restored in Russian army; German attack at Dixmude repulsed.
July 27—German aeroplanes raid Harwich; United States shipping board reorganized; Germans take Czernowitz and Kolomea.
July 28—More American troops arrive in France.
July 30—Heavy artillery duel in Flanders; Norwegian mission arrives in Washington.
July 31—British drive in Flanders begun, extending from Warneton to Dixmude.
Aug. 1—Russians begin offensive in Galicia, but retreat in south.
Aug. 2—Germans advance in Bukowina.
Aug. 3—Austrians take Czernowitz; changes made in Russian cabinet; United States shipping board decides to commandeer shipping in American yards; Root mission returns from Russia; premier and nearly whole of Russian cabinet resign.
Aug. 5—Canadians advance on Lens; Kerensky returns to office.
Aug. 6—Kerensky forms new cabinet.
Aug. 7—Liberia declares war on Germany; Mackensen begins attack on Rumanians in Moldavia.
Aug. 8—Canadian senate approves conscription; Russians fall back near the Sereth river.
Aug. 11—Henderson leaves British cabinet.
Aug. 12—German aircraft raid English coast.
Aug. 13—Japanese mission arrives in America on war emergency business.

Aug. 14—China declares war on Germany and Austria-Hungary.
Aug. 15—Pope's peace appeal is published; Canadians capture Hill 70, dominating Lens.
Aug. 16—British and French gain on nine mile front east and north of Ypres.
Aug. 19—Germans wrecking St. Quentin; Italians begin offensive on Isonzo.
Aug. 20—French attack on both sides of Meuse in Verdun region, taking Avocourt wood, Le Mort Homme, Corbeaux wood, Cumieres, Talou ridge, Hills 240 and 244, Mormont farm and 4,000 prisoners.
Aug. 21—Canadians take 2,000 yards of German trenches in outskirts of Lens.
Aug. 22—German aeroplanes raid Dover, Margate and Ramsgate.
Aug. 23—Japanese mission arrives in Washington; Russians evacuate Riga.
Aug. 24—Italians take Monte Santo; French take Hill 304 near Verdun.
Aug. 25—French take fortified positions near Bethincourt.
Aug. 26—French take Beaumont wood from Germans; Britons win east of Margicourt.
Aug. 27—General embargo on exports beginning Aug. 30 proclaimed by the president; full aid to Russia pledged by President Wilson; reply of United States to pope's peace note sent.
Aug. 28—Civilians flee from Trieste; Canadian conscription bill signed.
Aug. 29—Italians gain complete control of Bainsizza plateau.
Aug. 30—President fixes price of wheat.
Sept. 1—German troops appear on Carso front.
Sept. 3—Riga captured by the Germans; German planes raid Chatham, England, killing 107 sailors and wounding ninety-two.
Sept. 4 and 5—German aeroplanes drop bombs on American hospital camp in France, killing five and wounding ten persons; Italians take Monte San Gabriele.
Sept. 5—I. W. W. offices in many cities raided; first contingents (5 per cent) of national army go to training camps.
Sept. 7—American liner Minnehaha sunk.
Sept. 8—State department reveals aid given by Sweden in German minister's plot in Buenos Aires to cause sinking of Argentine ships; French launch new offensive on right bank of the Meuse.
Sept. 13—State department reveals secret aid given by Swedish charge d'affaires in Mexico to Germany.
Sept. 14—Premier Kerensky proclaims Russia a republic.
Sept. 15—British advance east of Westhoek.
Sept. 20—British advance along Ypres-Menin road to a depth of more than a mile and a half.
Sept. 21—Secretary Lansing makes public Bernstorff note asking for money with which to bribe congress; replies of Germany and Austria-Hungary to Pope Benedict's peace note made public.
Sept. 24—Price of steel cut by agreement between manufacturers and war industries board; German aeroplanes and Zeppelins raid England.
Sept. 27-28—Germans repulsed in counterattacks east of Ypres.
Sept. 28—British occupy Ramadie on the Euphrates.
Oct. 1—German air squadrons raid English coast towns.
Oct. 4—British win on an eight mile front north of Langemarck.
Oct. 5—French repulse attacks on the Aisne.
Oct. 6—Extra session of congress ends.
Oct. 7—Uruguay severs relations with Germany.
Oct. 9—Mutiny on German fleet made public.
Oct. 13-17—Germans take island of Oessel.
Oct. 13—United States destroyer Cassin damaged by torpedo; one life lost.
Oct. 17—United States transport Antilles sunk; German raiders sink two British destroyers and eight merchantmen in North sea.
Oct. 18—Germans capture Moon island.
Oct. 23—French capture Malmaison fort and four villages.
Oct. 24—Big Austro-German drive against Italian front begun; part of Bainsizza plateau taken.
Oct. 26—Italians evacuate Bainsizza plateau.
Oct. 27—Austrian and German troops advance through Julian Alps; 2nd Italian army defeated.
Oct. 28—German-Austrian forces take Monte Santo, Goritz and Cividale; United States transport Finland torpedoed, but returns to port; nine men killed.
Oct. 29—Whole Italian Isonzo line falls; Italians retreat to the Tagliamento river.
Oct. 30—Germans and Austrians take Udine.
Nov. 1—Germans advance southeastward from Udine; British take Beersheba.
Nov. 2—American steamship Rochester torpedoed and sunk; Germans retreat from part of the Chemin des Dames; Italians abandon eastern bank of the Tagliamento river.
Nov. 3—Three Americans killed, eleven wounded and eleven captured by German trench raiding party; British attack Gaza.
Nov. 4—British advance up the Tigris.
Nov. 5—Austro-German forces cross the middle Tagliamento river.
Nov. 6—Italians abandon the Tagliamento line.
Nov. 7—Austro-Germans reach the Livenza River; British take Gaza.
Nov. 8—Austro-German forces cross the Livenza river and outflank the Italians.
Nov. 9—Gen. Armando Diaz made commander in chief of the Italian army in place of Gen. Cadorna; Italians make stand on the Piave river; inter-allied military council formed.
Nov. 10—Italians yield the east bank of the Piave river; British complete conquest of Passchendaele ridge; British take Askalon.
Nov. 11—Austro-Germans take Belluno, the Vidor bridgehead and attack Italian positions in the Sette Comuni plateau.
Nov. 12—Germans and Austrians advance down the Piave to Feltre.
No. 13—Austrians cross the Piave river at Zenson.
Nov. 14—Americans ambush German patrol on

French front; Austro-Germans occupy Primoland and Feltre.
Nov. 15—Italians hold their positions on the Piave river; British take junction of Beersheba-Damascus railway.
Nov. 16—Italians flood lands near Venice to stop advance of enemy.
Nov. 17-18—Italians repulse attempts of enemy to cross the Piave.
Nov. 18—British take Jaffa.
Nov. 19—Italians attack on Asiago plateau.
Nov. 20—Gen. Haig starts drive on Somme front.
Nov. 21—British under Gen. Byng take Germans by surprise in Cambrai region advancing five miles and taking thousands of prisoners; German attacks in Monte Grappa region stopped by Italians.
Nov. 23—Battle of Cambrai continues; German emissaries sent to parley with Russian peace faction.
Nov. 24—Secret Russian treaties published.
Nov. 25—French attack near Verdun.
Nov. 26—British advance near Jerusalem; French and British infantry re-enforcements reach Italian lines.
Nov. 27—Allied war conference assembles in Paris.
Nov. 28—Armistice negotiations begun with Germany by bolsheviki; conference of Scandinavian rulers held at Christiania, Norway.
Nov. 29—German reichstag reassembles.
Nov. 30—The Germans in a determined attack drive the British back from their positions for a distance of about two miles, nearly to the Bapaume-Cambrai road; at the south end of the new British front the Germans advance through Gonnelieu to Gouzeaucourt; later the British retake Gouzeaucourt and LaVacquerie.
Dec. 1—British succeed in regaining nearly a mile of the front lost near Gouzeaucourt; several American engineers killed in German attack.
Dec. 3—London announces officially that "East Africa has been completely cleared of the enemy;" every German colony is now occupied by allied forces; armistice arranged between Russians and Germans.
Dec. 4—President Wilson asks congress to declare war on Austria-Hungary; Gen. Dukhonin killed by bolsheviki at Mohilev.
Dec. 5—Teutons launch new offensive on Asiago plateau.
Dec. 6—Great disaster caused at Halifax by explosion of munitions ship; United States destroyer Jacob Jones torpedoed and sunk.
Dec. 7—Congress passes resolution declaring state of war to exist between United States and Austria-Hungary; Austrians make gains on the Asiago plateau; Roumania forced to join Russia in peace parley.
Dec. 8—Government in Portugal overthrown by revolution.
Dec. 9—Gen. Kaledines begins revolt against Russian bolsheviki; Italians check foe on Asiago plateau.
Dec. 10—Capture of Jerusalem by British under Gen. Allenby announced.
Dec. 11—Gen. Allenby formally enters Jerusalem; Japanese troops occupy terminal at Vladivostok.
Dec. 12—German mass attacks near Cambrai gain 500 yards of British trenches.
Dec. 14—Permanent allied naval council formed.
Dec. 15—Armistice signed between central powers and bolsheviki at Brest-Litovsk.
Dec. 17—Conscriptionists return to power in heavy Canadian vote.
Dec. 20—Premier Lloyd George addresses parliament on Britain's peace terms.
Dec. 22—German-Russian peace conference assembles at Brest-Litovsk.
Dec. 23—Seventh German war loan totaled over $3,000,000,000.
Dec. 25—At peace conference Germany proposes with Russia "peace without forcible annexations and indemnities."
Dec. 26—Vice-Admiral Wemyss appointed First Sea Lord of Britain. Government takes possession of railroads in United States.
Dec. 17—Turkish army failed to retake Jerusalem.

1918

Jan. 3—Germany refused to evacuate Russian territory.
Jan. 7—Earl Reading, Lord Chief Justice of England, appointed special ambassador to the United States.
Jan. 8—President Wilson addressed congress on peace; specified fourteen "rectifications of wrong and assertions of right."
Jan. 9—Conscription defeated in Australia.
Jan. 10—War between Russia and Bulgaria ended; Don Cossacks proclaim republic.
Jan. 12—Armistice between Russia and Germany extended one month.
Jan. 14—Joseph Caillaux, former prime minister of France, arrested for treason.
Jan. 16—Fuel administrator ordered industries closed five consecutive days and nine Mondays to save fuel and relieve railroad congestion.
Jan. 19—Russian assembly dissolved by Lenine because of disagreement on peace; Prussian legislature reaffirms exclusive right of Emperor to make war and peace.
Jan. 20—British vessels in Dardanelles destroyed German cruiser Breslau and drove Goeben ashore.
Jan. 21—Economic condition in Austria leads to strong effort to end war.
Jan. 23—One hundred and sixty thousand Turkish troops in Palestine desert.
Jan. 25—Germany conditionally accepts four of President Wilson's war aims, rejecting ten.
Jan. 26—Fires in ship yards in Newark and Baltimore cause loss of $2,000,000.
Jan. 28—Revolution in Finland assuming serious proportions.
Jan. 29—Three-fourths of Germany's troops have been sent to the western front from Russia.
Jan. 30—Italians resume offensive on the Asiago front and advance their lines.
Jan. 31—Serious strike riots in Germany.

Feb. 2—Major-General March appointed acting chief of staff of American army.
Feb. 6—Banks of the United States take issue of $3,000,000,000 treasury certificates; Tuscania sunk; carried 2,179 American troops; 171 lost.
Feb. 8—Germany announces 3,000,000 men on the western front preparing for gigantic offensive.
Feb. 9—Peace treaty between central powers and Ukraine signed.
Feb. 10—Bolsheviki rule in Russia reported as becoming intolerable.
Feb. 18—Regardless of peace negotiations, Germany resumes hostilities against Russia.
Feb. 21—Bolsheviki government appeals to people to resist German invasion.
Feb. 27—Japan proposes joint military operations in Siberia.
March 1—Official report showed 36 per cent of Canada's 400,000 killed or wounded; killed number 40,000.
March 3—Bolsheviki government signs peace at Brest-Litovsk; Russia loses Ukrainia, Esthonia, Livonia, Finland, the Aland islands and three Transcaucasian provinces.
March 5—Preliminary peace treaty signed between Roumania and the central powers.
March 6—American troops holding four and a half miles on battle front in France.
March 7—Treaty of peace signed between Germany and Finland.
March 9—Russian government transferred to Moscow.
March 10—Secretary of War Baker reached France on tour of inspection.
March 13—German troops occupy Odessa; driven out five days later.
March 14—Allies notify Holland of intention to seize Dutch ships in allied ports.
March 18—Premiers of the allies denounce "Germany's political crime against Russia."
March 20—Holland's ships interned in allied ports seized.
March 21—Germany's most stupendous offensive begun in France on 50-mile front.
March 23—Paris bombarded from distance of 76 miles.
March 25—Germans in swift advance reach Bapaume.
March 28—Germans reach Montdidier; Pershing offers France the entire American forces in "the greatest battle in history."
March 29—General Foch becomes supreme head of allied forces.
March 30—Anti-conscription riots in city of Quebec; daylight saving law in America became effective.
April 2—United States had loaned allies in first year of war $5,160,600,000.
April 3—Forty thousand German troops landed in Finland.
April 4—German offensive renewed east of Amiens; allied lines hold firm.
April 5—American army at end of first year of war totals more than 1,500,000 in uniform.
April 9—German attack in west shifted north around Messines ridge.
April 13—German troops occupy Helsingfors, Finland.
April 15—Count Czernin, Austrian minister of foreign affairs, resigned.
April 16—Germans capture Messines ridge; Bolo Pasha executed in France for treason.
April 17—Baron Burian appointed minister of foreign affairs in Austria-Hungary.
April 19—Italian army represented on French front; Lord Milner becomes British secretary of war.
April 21—Germans slow up western offensive to reform their legions; Japan agrees to loan United States 514,000 tons of shipping.
April 22—Ireland preparing for general strike as protest against conscription.
April 23—British naval raid against submarine bases at Zeebrugge and Ostend.
April 25—Germany demands heavy concessions from Holland; announced that United States expenditures average $35,000,000 per day.
April 26—Germans capture Mount Kemmel, southwest of Ypres.
April 27—Germans and Austrians renew Italian offensive.
May 4—Last day of third Liberty Loan. The $3,000,000,000 asked for was oversubscribed; Germans resume offensive in Flanders, with success.
May 7—British naval sortie against Germany's submarine base at Ostend.
May 27—Second great German offensive of 1918 begun on a 48-mile front in the Aisne region.
May 29—Germans had advanced ten miles over narrow area and taken twelve towns.
May 30—Soissons captured by Germans; Rheims endangered again.
June 1—Germans only forty-six miles from Paris, after gaining nine miles in one day.
June 3—Five German submarines attack United States coast and sink eleven ships.
June 5—United States marines fight on the Marne near Chateau Thierry.
June 10—United States marines capture south end of Belleau Wood.
June 22—Italians defeat Austrians on the Piave.
July 18—General Foch launches allied offensive, with French, American, British, Italian and Belgian troops.
July 21—Americans and French capture Chateau Thierry.
Aug. 2—Soissons recaptured by Foch.
Aug. 5—American troops landed at Archangel.
Sept. 12—Americans launch successful attack in Saint Mihiel salient.
Sept. 29—Allies cross Hindenburg line.
Sept. 30—Bulgaria surrenders, after successful allied campaign in Balkans.
Oct. 6—Germany asks President Wilson for armistice.
Oct. 8—President Wilson refuses armistice.
Oct. 9—Allies capture Cambrai.
Oct. 19—President Wilson refuses Austrian peace plea and says Czecho-Slovak state must be considered.
Oct. 23—President Wilson refuses latest German peace plea.

Oct. 27—German government asks President Wilson to state terms.
Oct. 29—Austria opens direct negotiations with Secretary Lansing.
Oct. 30—Italians inflict great defeat on Austria; capture 33,000; Austrians evacuating Italian territory.
Oct. 31—Turkey surrenders; Austrians utterly routed by Italians; lose 50,000 Austrian envoys, under white flag, enter Italian lines.
Nov. 3—Austria signs armistice amounting virtually to unconditional surrender.
Nov. 4—Allied terms are sent to Germany.
Nov. 7—Germany's envoys enter allied lines by arrangement.
Nov. 9—Kaiser Wilhelm abdicates and crown prince renounces throne.
Nov. 10—Former Kaiser Wilhelm and his eldest son, Friedrich Wilhelm, flee to Holland to escape widespread revolution throughout Germany.
Nov. 11—Germany accepts armistice terms.

Some Interesting Figures. America's part in the World War is summarized in the following statement, given out by the chief of the statistical branch of the General Staff:

Total armed force, including army, navy and marine corps.....4,800,000
Total men in the army.....4,000,000
Men who went overseas 2,086,000
Men who fought in France.....1,390,000
Total registered in draft.....24,234,021
Total draft inductions.....2,810,296
Cost of war to April 30, 1919, $21,850,000,000.
Battles fought by Americans, 13.
American deaths from battle wounds, 50,327.
American wounded, 205,690.
Deaths from disease, 58,073.
Total casualties in army, 322,182.

During the war 7,450,000 men were killed, the various belligerents suffering as follows:

Russia	1,700,000
Germany	1,600,000
France	1,385,000
Great Britain	900,000
Austria	800,000
Italy	300,000
Turkey	250,000
Serbia and Montenegro	125,000
Belgium	102,000
Rumania	100,000
Bulgaria	100,000
United States	48,900
Greece	7,000
Portugal	2,000

Peace Negotiations. The collapse of Germany as a military power was accompanied by a revolution, whereby the empire was abolished and a republic was established. Kaiser William and Crown Prince Frederick William fled to Holland, and on November 28 the emperor signed a formal document of abdication. Germany had thus fulfilled one of President Wilson's conditions, that the allies could not make peace with the Hohenzollerns. The peace conference met in Paris in January, 1919, and German representatives signed the treaty in Versailles on June 28. For details of the conference and terms of the treaty, see VERSAILLES, TREATY OF.

Related Articles. Various phases of the war and details connected with the subject which could not be treated in the general article may be found in the special articles listed below. The reader is also referred to the historical sections of the articles on the various countries affected by the war.

CITIES

Aleppo	Constantinople	Paris
Amiens	Damascus	Petrograd
Antwerp	Fiume	Rheims
Arras	Jerusalem	Riga
Bagdad	Lemberg	Saloniki
Belgrade	Lens	Sofia
Berlin	Liege	Triest
Brest	Lille	Venice
Brest-Litovsk	London	Verdun
Brussels	Louvain	Vladivostok
Bucharest	Moscow	Warsaw
Budapest	Namur	Ypres
Calais	Ostend	

RECONSTRUCTED NATIONS

Armenia	Hungary
Austria	Jugo-Slavia
Czecho-Slovak Republic	Poland

STATESMEN AND RULERS

Albert I	George, David Lloyd
Balfour, Arthur J.	Grey, Edward, Sir
Bernstorff, Count	Nicholas II
Charles I	Poincaré, Raymond
Clemenceau, Georges	Venizelos, Eleutherios
Constantine I	Victor Emmanuel III
Francis Joseph I	William II
George V	Wilson, Woodrow

MILITARY AND NAVAL COMMANDERS

Beatty, David, Sir	Joffre, Joseph J.
Bullard, Robert L.	Kitchener, Horatio H.
Foch, Ferdinand	Liggett, Hunter
French, John, Sir	Moltke
Haig, Douglas, Sir	Pétain, Henri
Hindenburg, Paul von	Pershing, John J.
Jellicoe, John, Sir	Sims, William S.

INSTRUMENTS OF WAR

Cannon	Poison Gas
Explosives	Submarine
Flying Machine	Submarine Mine
Howitzer	Torpedo
Machine Gun	Torpedo Boat

MISCELLANEOUS

Balance of Power	Livonia
Balkan Wars	Lithuania
Bolsheviki	Lusitania
Conscription	Mesopotamia
Courland	Nations, League of
Dardanelles	Palestine
Dobruja	Siberia
Esthonia	Triple Alliance
Gallipoli	Triple Entente
Kiao-chau	Ukraine

WORMS, *wurmz,* a term loosely applied to many small, rather long, creeping animals, lacking feet entirely, or having very short ones, including such various forms as the earthworm, the grubs of certain insects and intestinal parasites. The zoölogist, however, confines the term to animals belonging to the branch known as Vermes, and accordingly he excludes the larvae of all insects. See VERMES.

WORMS, *wormz,* GERMANY, situated on the Rhine, twenty-six miles southeast of

Mainz and twenty miles northwest of Heidelberg. It is an old city and contains many objects which are of interest because of their antiquity. Among these is the cathedral, which dates from the twelfth century, the Paulus Kirche, of about the same date, and a synagogue, which is still older. On Luther Platz is a monument to Luther, and it was in this city that he appeared before the diet in 1521 and refused to retract his theses (see LUTHER, MARTIN). The industries include the manufacture of textiles, leather, machinery, chemicals and chicory. Population, about 46,000.

WORMWOOD, *wurm'wood,* a perennial herb native to Europe and parts of Asia, which has been introduced into the United States and Canada. The erect, hairy stem from two to four feet high, bears coarse gray leaves and small yellow flowers. From the plant is extracted a bitter oil, used in the manufacture of the French liquor called *absinthe,* and as an ingredient of various medicines. In Biblical and other literature the plant is a symbol of bitterness.

WORSTED, *woos'ted,* or *wur'sted,* a tightly-twisted woolen thread made from long-fibered wool. The name comes from Worsted, the English village where it was first made. The thread is used for knitting and for weaving cloth. See WOOL AND WOOLEN MANUFACTURE.

WOUNDS, *woondz,* injuries to any of the soft parts of the body, occasioned by external violence and attended by a greater or less amount of bleeding. Cuts, incisions, stabs and bruises are good illustrations of wounds.

Poisoned wounds are those complicated with the introduction of some poison or venom into the part. If wounds are of such a nature that the edges can be brought together closely, and if then bacteria can be kept out, healing "by first intention" takes place rapidly and with little inflammation. When wounds are deep and open, they are slower in healing. Wounds poisoned by chemicals or by bacteria are likely to be serious, and sometimes an apparently trifling injury of this sort results in death.

The first step to be taken in the treatment of any of the wounds mentioned above is to stop the bleeding by binding tight the artery or vein which has been opened. Then thoroughly cleanse the wound with warm water, removing all foreign matter, and wash with some good antiseptic, such as boric acid in saturated solution, a weak solution of carbolic acid, or with iodine. Finally, bandage the wound with perfectly clean gauze or light cloth. These bandages should be removed frequently, and the wound should again be cleaned, disinfected and redressed.

A fluid known as *Dakin's solution* was extensively used by French surgeons in the World War for irrigating wounds. It is a combination of chlorinated lime, sodium carbonate (dry) and sodium bicarbonate, and is an excellent antiseptic. See SURGERY.

WREN, a very active little bird, common in America, Europe and Asia. The wrens are distinguished by their small size, slender beaks, short rounded wings, brown or gray mottled plumage and erect tails. The common *house wren* of the United States builds its nest in boxes prepared for it, or crevices, wherever it can find them, seeming to have no fear of human beings and never hesitating to attack cats, dogs, swallows and other trespassers. The eggs are from three to nine in number and are white, dotted with salmon. The song of the wren is melodious and flutelike, and its amusing ways make it a great favorite everywhere.

WREN

It destroys large numbers of noxious insects; it is therefore a friend of the farmer and amply repays any care that may be taken of it. The largest wren in the United States is the *cactus wren* of the Southwest; the smallest is the *winter wren,* only four inches long.

WREN, CHRISTOPHER, Sir (1632–1723), one of the greatest of English architects, born in Knowle, Wiltshire. He was educated at Waldham College, Oxford, became a fellow of All Souls in 1653, was appointed professor of astronomy at Gresham College later, and afterward was elected Savilian professor of astronomy at Oxford.

There were few trained architects in England in his time, and as a scientist he was appointed one of the commissioners to restore Saint Paul's Cathedral. Before the work of restoration began the great London fire of 1666 occurred, destroying the building. Wren had been gradually drawn by consultations deeper and deeper into the problems of construction, and ultimately had become an enthusiastic student. Thus pre-

pared, the labor of building Saint Paul's devolved largely on him, and he was occupied with the work from 1675 to 1710. At the same time he made many designs for other public buildings, and in the forty years following the great conflagration there was not an important public building in London that was not designed by him.

Among the notable buildings he designed are the modern part of the palace at Hampton Court; the library of Trinity College, Cambridge, the hospitals of Chelsea and Greenwich; the Church of Saint Stephen's, Walbrook; those of Saint Mary-le-bow and Saint Michael, Cornhill; that of Saint Bride, Fleet Street, and the campanile of Christ Church, Oxford. In 1680 he was chosen president of the royal works, and from 1685 to 1700 he represented various boroughs in Parliament. Over the north doorway of Saint Paul's is a memorial tablet, on which are the well-known words, *Si monumentum requiris, circumspice* (If thou seek his monument, look about thee).

WRENCH, *rench,* a tool designed for gripping nuts, bolts, screws or pipes so that they may be turned. A simple wrench is that used by machinists, consisting of a flat metal bar with angular openings at end and sides. Another is an *alligator wrench,* made of a single piece of metal, at one end a handle, at the other a pair of jaws, with wedge-shaped opening, one side of which is toothed. The *monkey wrench* is more complicated. A bar of metal equipped with a wooden handle is fitted with a stationary jaw and a jaw which can be adjusted to various widths by means of a screw.

WRESTLING, *wres'ling,* a competitive sport engaged in by two persons, each of whom tries to throw the other prone upon the ground. Wrestling brings into play every muscle of the body, and when engaged in under the proper restraining rules is one of the most beneficial of sports. The winner in a wrestling match is usually the man who is the more skilful and alert; strength and weight count, but a quick eye and decision of action are even more essential.

Wrestling, being the most natural of sports, is among the oldest. In all Greek athletic contests it had a prominent part. The Greek wrestlers oiled their bodies, supposedly to make them more supple. Grace was insisted upon, and the most stringent rules were enforced. Roman wrestling was of a rougher sort, in which participants were not infrequently killed. In the Graeco-Roman wrestling of modern France, the contestants are stripped to the waist and are not allowed to grasp each other anywhere below the belt or to trip each other. Most of the struggle takes place after both men are on the mat, and a fall is scored when one of the contestants forces both shoulders of his opponent to the ground.

The Irish method of wrestling is known as the *collar and elbow.* The wrestlers wear short jackets with stout collars and sleeves, to afford a good grip. Each man seizes the collar of the other with his right hand and the sleeves near the elbow with his left hand. If his grip loosens, he loses. A man is thrown when two shoulders and a hip or a shoulder and two hips touch the ground.

In England a good method of wrestling for boys and youths is known as the *black-hold catch.* Each contestant stands with his chin on the shoulder of the other, grasping the other about the body, the right arm of each under the left arm of the other. Tripping is allowed, but kicking or brutality is barred. The first step to certain success is to get the right shoulder beneath the armpit of the opponent. If a contestant loses his grip or if his shoulders touch the floor, he loses.

A freer method of wrestling, common in both England and America is the *catch-as-catch-can* method, in which, as the name implies, holds are taken at random. Tripping is permitted, but kicking and throttling are barred. Two shoulders on the floor constitutes a fall. When the match is professional, two falls in three or three in five are usually required for a decision. There are a number of recognized "holds" which give a wrestler great advantage over an opponent, such as the *grape-vine lock,* the *chancery,* the *half-Nelson* and the *hammer-lock.*

The Japanese have a system of wrestling known as *jujutsu,* which is a method of self-defense without the use of weapons. A master of jujutsu can, by a slight, swift movement, benumb an opponent's brain, dislocate his hip or shoulder or burst or twist a tendon. The police force of Japan are required to attain a certain proficiency in jujutsu, but the system in its entirety is taught to only a few men of the highest character and self-mastery. None is given the training without first taking oath not to reveal its secrets. See JUJUTSU.

WRIGHT, *rite,* CARROLL DAVISION (1840–1909), an American economist, statistician and legislator, born at Dunbarton, N. H. He received an academic education, and had been admitted to the bar when the Civil War broke out. He enlisted as a private and was promoted to a colonel's rank. After the war he was elected to the Massachusetts senate, and from 1873 to 1885 was chief of the state bureau of labor statistics. From 1885 to 1902 as United States Commissioner of Labor he was responsible for the publication of many valuable bulletins and studies on the labor problem.

In the latter year he became president of the college department of Clark University, Worcester, Mass. At various times he did important work for the government—in 1890 in connection with the census; in 1902 as a member of the anthracite coal commission—and lectured at Harvard, Johns Hopkins, Michigan and Northwestern universities. He was a member of many learned societies in America and abroad, and was honored by France with the Cross of the Legion of Honor. His books include *The Industrial Evolution of the United States, Outlines of Practical Sociology, Some Ethical Phases of the Labor Question* and *Battles of Labor.*

WRIGHT, HAROLD BELL (1872–), a popular American novelist, born in Rome, N. Y., and educated in the preparatory department of Hiram College, Ohio. He was at various times a painter and decorator, a landscape painter and a minister in the Disciples of Christ Church, and his first novel, *That Printer of Udell's* (1903), was written while he was preaching in Missouri. It was followed by *The Shepherd of the Hills,* a great popular success. In 1908 he retired from the ministry to devote himself entirely to writing, producing, in rapid succession, *The Calling of Dan Matthews, The Uncrowned King, The Winning of Barbara Worth, Their Yesterdays, The Eyes of the World* and *When a Man's a Man.* In the latter part of 1919 appeared *The Re-Creation of Brian Kent.*

WRIGHT, ORVILLE (1871–), and WILBUR (1867–1912), two brothers who won undying fame as inventors of practical flying machines. Orville was born in Dayton, O., and Wilbur in Millville, Ind. Both were educated in the public schools. They began to study aeronautics in 1896. At this time they had a bicycle shop in Dayton, Ohio.

In 1900 they began experiments in aviation with machines of their own invention and manufacture, and three years later they had produced a machine which would remain in the air over a minute. In 1905 they made the first long-distance flight, near Dayton; and in 1908 Wilbur made his first public flight in France. After the brothers had won gold medals and homage in Europe they were recognized at home, and their machine was accepted by the United States government for use in the army. The Wright machines are now in use by every great nation. See FLYING MACHINES.

WRIT, in law, a formal order issued by a court in the name of a state enjoining the person mentioned therein to perform some specified act. It is issued under seal, attested by the proper officer and addressed to the sheriff or some other officer legally authorized to enforce its execution.

The following are the writs in most common use:

A writ of summons commands an authorized officer to notify a person to appear in court to answer to a complaint.

A writ of replevin is an order permitting the recovery of goods which have been illegally seized.

A writ of mandamus is a command to a person or corporation to something pertaining to his, or its, office or duty.

A writ of quo warranto is a command to show by what right an act is performed or an office held.

A writ of error is issued to remove an action to a higher court, by reason of error in the proceedings of the inferior court.

A writ of certiorari is issued by a court of review, requiring the record of a case to be sent up from an inferior court for examination.

For writ of subpoena see Witness. See, also, Habeas Corpus; Injunction; Capias.

WRITING, signs or characters inscribed on a surface for the purpose of recording and communicating thought. The earliest form of writing, practiced by all primitive peoples, was that of picture writing, or the copying of objects direct from nature. After this came symbolical writing, such as was developed in its highest form in the cuneiform system of Western Asia and the hieroglyphics of Egypt, in which abbreviated pictures were used as arbitrary symbols, first of things and later of sounds and words. These systems marked the transition from ideographic to phonetic writing, in which signs represent either syllables or single sounds.

Of systems of writing in which signs represent syllables, the most notable is the Chinese. As the same sound may have several meanings, it is often necessary to add to a syllable some sign to indicate which meaning is intended. The Phoenicians, basing their system on the Egyptian, are said to have invented the first phonetic alphabet, in which signs represent single sounds. Tradition has it that the Phoenician system was introduced into Greece by Cadmus of Boeotia, about the seventeenth century, B. C. The Greek forms spread to Sicily and Italy, being modified as they spread.

Various systems of writing differ in the arrangement of their symbols. Chinese characters are read in columns from top to bottom. Mexican picture writing is read from bottom to top. Hebrew writing, a modification of one form of the ancient Egyptian, is read from right to left. Sanskrit, Greek, Latin and all modern European languages are read from left to right. In medieval manuscripts a variety of styles were adopted in different epochs and countries.

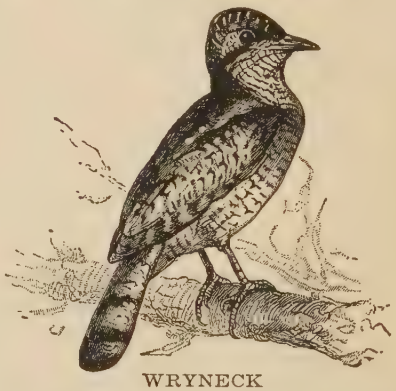
Whole manuscripts were written in large or small capitals. Uncial letters, which prevailed from the seventh to the tenth century, were rounded capitals, with few hair strokes. Gothic characters, fanciful deviations from the Roman types, became common from the thirteenth to the fifteenth century. In England, in the early Middle Ages a variety of styles called Saxon prevailed; a mixed style was formed of a combination of Roman, Lombardic and Saxon characters; the Norman style came in with William the Conqueror, and the English court hand, an adaptation of Saxon, prevailed from the sixteenth century to the reign of George II.

There have been various unsuccessful attempts to introduce systems of phonetic writing, in which each sound should be reproduced by one invariable sign. Systems of shorthand are generally phonetic. See ALPHABET; HIEROGLYPHICS; SHORTHAND.

WRITS OF ASSISTANCE. In American colonial days the British customs officials were provided with general search warrants to aid them in collecting import duties. These warrants were called *writs of assistance.* These writs differed from an ordinary search warrant in that they did not limit the officer's search to a specified time or place, or to specified goods, but authorized him to seize any suspected goods.

The first writ of this kind was issued in 1761 and aroused much opposition. James Otis, advocate-general of the colony of Massachusetts, resigned his office and became leading attorney in a case in opposition to the issuance of the writs. In his appeal to the court he uttered radical sentiments in opposition to the king and Parliament. The writ was declared legal, but it was rarely, if ever, used. See WARRANT.

WRY'NECK, a European bird related to the woodpeckers, but, unlike the latter, unable to climb. It makes its nest in the natural cavities of trees, and lays from seven to



WRYNECK

twelve shiny, white eggs. It eats ants and other ground insects, which it captures with its bill or with its wormlike tongue. When disturbed, the bird thrusts its head out over its nest with an undulating movement, which has given it its name. Its habit of hissing on such occasions has earned for it the sobriquet *snake bird.*

WURTTEMBERG, *vürt'em berK,* GERMANY, until 1918 a kingdom situated in the southern part of the former German Empire, bounded on the east and south by Bavaria and on the southwest and north by Baden. It has an area of 7,528 square miles, and a population of approximately two and a half million. In the Middle Ages, Württemberg was a county. In 1495 it was erected into a duchy and in 1806 became a kingdom. At the formation of the German Empire, in 1871, it became a part of that government. For surface, climate and products, see GERMANY.

WYANDOTTE, *wi' an dot.* See HURON.

WYANDOTTE CAVE, *wi' an dot,* a natural cavern in Crawford County, Ind., five miles northwest of Leavenworth. It is next to Mammoth Cave in size and has been ex-

plored for about twenty-three miles. It is noted for its large chambers, some of which are 200 feet high and 300 feet broad. The stalactite formations in this cave are of unusual magnitude and beauty. Those in the room known as the Pillared Palace are of unusual interest, while Monument Mountain is a group of stalagmite columns 175 feet high.

WYCLIFFE, or **WICLIF**, *wik'lif*, JOHN (about 1320–1384), an English reformer, born at Hipswell, in Yorkshire, England. Of his early life we know nothing. At sixteen he entered Oxford, became a fellow of Merton College, and later master of Balliol College and warden of Canterbury Hall. He zealously applied himself to the study of the Scriptures, which he subjected to the most critical analysis, and he early manifested a skepticism in regard to ecclesiastical doctrine and discipline.

Disputes were going on at this period between Edward III and the Papal court, concerning tribute exacted from King John, and the English Parliament had resolved to support the sovereign in his refusal to submit to the vassalage. Wycliffe took a prominent part in this affair, urging King Edward to refuse the tribute to the Holy See. Pope Gregory XI, on learning of Wycliffe's defiant attitude toward the Church in regard to this matter, wrote letters to the king, to the archbishop of Canterbury and the University of Oxford, to have him tried for heresy.

In subsequent sermons, Wycliffe attacked the higher clergy, accusing them of having assumed undue power and unbecoming arrogance. In February, 1378, he appeared before Archbishop Courtenay in Canterbury Cathedral, attended by John of Gaunt and other friends. The people who were present became so angered against Wycliffe that he and his friends had to flee for their lives. He retained the favor of the king, however, and soon afterward was awarded a professorship of divinity in the University of Oxford. In 1380 he opposed the doctrine of transubstantiation at Oxford, and two years later he was summoned to appear before a commission of bishops and doctors at London. He refused to attend, availing himself of a university prerogative. The trial was conducted without his presence. Ten out of twenty-four articles culled from his writings were condemned as heretical, and fourteen were declared to be erroneous. By an order from the crown, he was deprived of his professorship and expelled from the university. He returned to Lutterworth, in Leicestershire, where Edward had given him a rectory. Here he labored zealously and unweariedly. Part of his time was spent in translating the Bible from the Vulgate. He continued to write unceasingly and boldly against the papal claims, upholding the Scripture itself as the highest explanation of the divine law and urging the importance of teaching it to every Christian and hence the duty of giving it to the world in the common tongue of the people. He sent out young men with the Bible, to preach the plain, straighforward word of God. These men were known as *poor priests*, and the people heard them gladly.

On Dec. 28, 1384, while hearing mass, he was seized with paralysis and died a few days later.

Wycliffe's followers were active in spreading his teachings, which for about a generation after his death acted as a powerful religious and political factor among the English people. Before Wycliffe's time there had been no systematic attempt to translate the whole Bible into English, and hence the vast importance of the version known as Wycliffe's Bible. Aside from its value from a theological point of view, Wycliffe's Bible was an important contribution to English prose.

WYOMING, a northwestern state of the American Union, is located on the great Rocky Mountain plateau, and is rectangular in form, its boundaries being formed by meridians of longitude and parallels of latitude. It lies between Montana on the north and Colorado on the south, with South Dakota and Nebraska on the east and Idaho and Utah on the west. The name, meaning

large plains, was taken from that of the Wyoming valley in Pennsylvania. The southwest corner cuts into Utah. Yellowstone National Park, which with its adjoining forest reserve has an area of 5,000 square miles, occupies the northwestern corner, extending over the boundary into Idaho and Montana. The length of the state from east to west is 355 miles, the width from north to south is 276 miles, and the area 97,914 square miles. It is almost twice as large as New York and a little larger than Oregon, ranking eighth among the states.

The People. In 1910 Wyoming had a population of 145,965; in 1918, according to Federal estimate, the number had increased to 190,380. About one-sixth of the inhabitants are foreigners; Austrians, Canadians, English, Germans, Greeks, Italians, Scotch and Swedes are the most numerous. There are about 1,000 Chinese and Japanese, most of whom are employed as laborers in the mines. The Indian reservation within the state covers an area of 960 square miles, and the Indian population is about 1,900. Nevada is the only state having a smaller population.

Surface and Drainage. The surface of the state, for the most part, is composed of mountains and plateaus. The great plains of the Mississippi valley slope away from the foothills in the east. The elevation varies from 3,500 to 14,000 feet. The main axis of the Rocky Mountains, which forms the Continental Divide, extends from north to south across the state. The northern group of these mountains finds here its greatest development and is noted for its wild and rugged character and for its picturesque scenery. Yellowstone National Park, 3,600 square miles in area, occupies the northwestern corner of the state. In the west central part are the Wind River Mountains; in the north central part, the Big Horn Mountains, and in the extreme northeast, the Black Hills, extending into South Dakota; in the southeast is the Laramie range; in the south, the Medicine Bow Mountains, and in the west the Teton, Gros Ventre and Shoshone ranges. The southwestern portion of the state slopes towards the Pacific Ocean and forms a part of the Grand River Valley. From the eastern and western slopes of the Rocky Mountains, several rivers take their rise, among them the North Platte, the Green, the Snake, the Laramie and the Shoshone.

Climate. Wyoming has the typical climate of the mountainous region of the northwest. The air is pure and dry, clear weather prevails and the high altitude is for many healthful. The average annual temperature is 45.5°; the mean annual rainfall, 12.98 inches.

Mineral Resources. In every mountain range of Wyoming, gold, silver, lead and copper ores are to be found, but as yet the resources have not been largely developed. Coal mining is most important, the annual output being about 8,000,000 tons, and there are over 20,000 square miles of coal lands, from which a steadily-increasing tonnage is being mined. Valuable iron deposits are found in various localities in the state. Petroleum occurs in Fremont and Natrona counties, and its production is next to that of coal in importance; in 1916 this amounted to 6,234,137 barrels. Extensive phosphate beds are found in Uinta County. The state also possesses extensive deposits of soda and an abundance of valuable building stone. Gold, silver and copper are mined in paying quantities.

Agriculture. Below the timber line, the mountains are covered with forests of coniferous trees. Between the mountain ranges are broad plateaus, with arable soils, which by means of proper irrigation yield prolific crops. On account of the slight rainfall it has been supposed that only a small part of the state was capable of cultivation. However, modern methods of moisture conservation have brought vast areas under cultivation. Irrigation ditches also have been carried long distances from the source of water supply. The result has been an immense increase in the tillable area. The raising of livestock is the most important agricultural industry. The nutritive grasses which so abundantly cover the great ranges of the pasturage support many thousands of cattle and sheep. Oats, potatoes, wheat and hay are the principal crops.

Irrigation is being largely extended. The Shoshone project, the greatest in the state, includes a remarkable dam, 328 feet high, across a narrow canyon. The dam is only 85 feet long at the bottom and 200 feet at the top. A smaller dam diverts the waters of the Shoshone River, through a tunnel 3¼ miles long, into a canal which for 40 miles passes only the upper edge of a broad and fertile valley containing 150,000 acres. Near

Douglas, in Converse County, and in Johnson and Sheridan counties there are large irrigated areas.

Manufactures. As Wyoming is an agricultural and mineral state and still in the first steps of material development, it has no distinctive manufacturing interests. The most important manufacturing industry is car construction and railway repair, and next in importance is the manufacture of lumber and timber products.

Transportation. The principal railroads are the Union Pacific, the Chicago, Burlington & Quincy and the Chicago & North Western. The total operative mileage is over 2,000.

Government. The legislature is composed of a senate of twenty-eight members and a lower house of fifty-six members, elected for two years. The sessions are biennial, and are limited to forty days. The executive department consists of a governor, a secretary of state, an auditor, a treasurer and a superintendent of public instruction, each elected for four years. The courts consist of a supreme court, consisting of a chief justice and two associates, and such inferior courts as the legislature may establish.

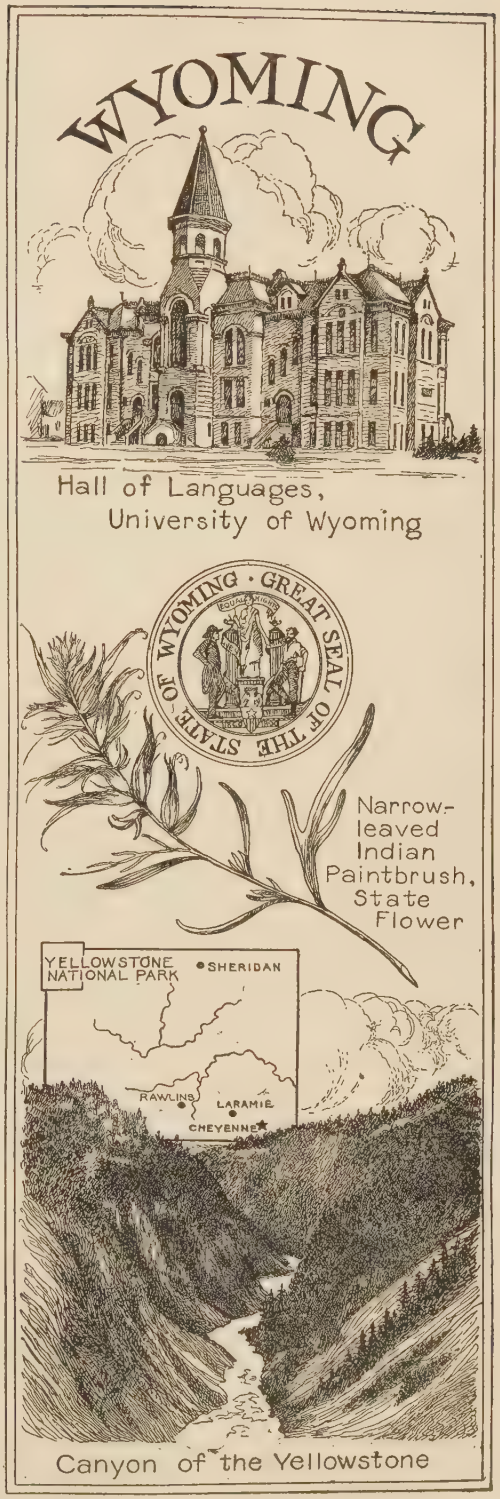
Education. The University of Wyoming, chartered in 1886, is situated at Laramie and is the leading educational institution. The expenses of the public school system are provided for in part by the rental of government lands which are set aside for school purposes. The total extent of lands which may be so used is 3,600,000 acres.

The state school system is in charge of a State Board of Education, with a commissioner, elected by the board, as the executive officer. There is a state superintendent of public instruction, who is a member of this board, but his relation is chiefly advisory.

Institutions. There is a soldiers' home at Buffalo, a hospital for the insane at Evanston, a school for defectives at Lander, an industrial institute at Worland and a state hospital at Rock Springs. The penitentiary is at Rawlins. At Thermopolis there is the Big Horn Hot Springs Reserve.

Cities. The chief cities are Cheyenne, the capital; Laramie and Sheridan. All are under 15,000 in population.

History. Wyoming was a part of the territory included in the Louisiana Purchase of 1803, with the exception of the southwest corner, which was a part of the territory ac-



Items of Interest on Wyoming

Wyoming is governed under a constitution adopted in 1889.

Amendments if agreed to by two-thirds of the members of each branch of the legislature are submitted to the electors of the state at the next general election.

About one-eighth of the land area is devoted to farms, but the improved land is only two per cent of the total area. Wyoming has over 30,900,000 acres of unreserved land.

There are two soda lakes in the state. In the summer the soda hardens and is cut into blocks three or four feet thick.

Wyoming's rivers are much frequented by anglers in search of rainbow trout. Specimens weighing from eight to ten pounds are found in the Big Laramie River.

The Yellowstone region is described in Washington Irving's *Captain Bonneville,* the hero being one of the early traders.

Wyoming abolished capital punishment in 1915. It has enacted workmen's compensation, child labor and mothers' pension laws.

Questions on Wyoming

What is the peculiar feature of the boundaries of Wyoming? Do the boundaries of any other state have a similar feature?

What does the name *Wyoming* mean? Is the name appropriate to the state?

What great river systems have tributaries in Wyoming?

What region within the state has a world-wide reputation because of its scenery?

What part of the state has the largest number of inhabitants? Why?

Locate the Indian reservations on the map. How many are there?

Why is Wyoming one of the leading wool-producing states?

What are the most important mineral productions?

Why is the mining industry not more fully developed?

Why are there not more railroads?

quired from Mexico in 1848. The first white man known to have visited the region was Sieur de la Verendrye, in 1734. He was seeking sites for fur-trading posts. White hunters visited the Yellowstone region in 1807, and from that time hunters began to traverse the territory.

The first permanent settlement was made at Fort Laramie in 1834. Most of the immigration to California and Oregon passed through the territory, but not until the completion of the Union Pacific Railroad in 1866 were settlers attracted to the country. The Indians were hostile, and long before the construction of the railroad the government had built a chain of forts for the protection of immigrants. The discovery of gold in 1867 increased the number of settlers, and in 1869 Wyoming became an organized territory. Yellowstone National Park (which see) was created in 1872. Wyoming was admitted into the Union as the forty-fourth state on July 10, 1890. From the organization of its first government the state has given women equal suffrage with men. From this practice it received its popular name, THE EQUALITY STATE.

Related Articles. Consult the following titles for additional information:

Bighorn River
Black Hills
Cheyenne
Laramie
Rocky Mountains
Sheridan
Snake River
Yellowstone National Park
Yellowstone River

WYOMING, UNIVERSITY OF, a coeducational state institution, founded at Laramie in 1886. It comprises colleges of liberal arts, agriculture, engineering and education, departments of music, home economics, commerce and university extension, a teachers' training high school and a summer school. The Wyoming state normal school is maintained as a part of the college of education, and the agricultural experiment station is operated in connection with the agricultural departments. There is a faculty of about sixty, and a student enrollment of about 500. The library contains 40,000 volumes.

WYOMING VALLEY MAS'SACRE, a fearful massacre in Wyoming Valley, Pa., on July 3 and 4, 1778, perpetrated by an English and Indian force against the American settlers of the valley. A vast majority of the inhabitants, including women and children, were slain in the course of two days' slaughter, and the rest fled eastward to the nearest settlements. The valley was not settled again for several years.

X, the twenty-fourth letter of the alphabet and the representative of what might as well be denoted by *ks* or *gs*. The letter *x* was until a late date the last in the Roman alphabet, but *y* and *z* were finally added from the Greek. As an initial letter, it is pronounced like *z*, as in *Xenophon*.

In algebra, *x* is the usual symbol for the unknown quantity. In Roman numerals X signifies ten, perhaps from the fact that it represents a V standing upon a second V inverted.

XANTHIPPE, *zan thip'pe*, the scolding wife of the philosopher Socrates, whose forbearance with her quarrelsome temper was a salient trait in his character. The name has become proverbial as that of a scolding shrew.

XAVIER, *zav'e er*, Francisco De (1506–1552), better known as Saint Francis Xavier, was a Jesuit missionary in Asiatic countries, earning the title "Apostle of the Indies." He was a native of Northern Spain, the son of a nobleman whose family seat was Xavier. He was sent to Paris to be educated, and with Loyola he founded the Society of Jesus. In the early part of 1540, he was chosen for the mission to India. From Goa, where he arrived in May, 1542, he extended his labors southward to Ceylon, Malacca and Celebes. He spent two years in Japan and returned to Goa to organize a mission to China, but before he could overcome the difficulties in his way, he died. Xavier was canonized in 1622.

XENIA, *ze'ne ah*, Ohio, the county seat of Greene County, fifty-five miles southwest of Columbus, on the Little Miami River and on the Cincinnati, Hamilton & Dayton, and the Pennsylvania railroads. The city is surrounded by a productive farming region. There are extensive cordage works, shoe factories, fuse and powder mills, machine shops and automobile, rubber and candy factories. The Xenia Theological Seminary and the Ohio soldiers' and sailors' orphans' home are located here. A courthouse, a Carnegie Library and a Federal building are prominent features. Wilberforce University for colored students is located three miles north. There are interesting Indian mounds and relics in the vicinity. Xenia was settled in 1803, and was incorporated five years later. Population, 1910, 8,706; in 1917, 8,713 (Federal estimate).

XENOPHON, *zen'o fon* (about 434–about 355 B. C.), an Athenian historian and general, a pupil of Socrates. When about forty years of age, he joined the expedition of Cyrus against Artaxerxes. Cyrus was killed in the Battle of Cunaxa, and the Greek generals were put to death. The ten thousand mercenaries then chose Xenophon as their leader, and he brought them out of the strange country to the Black Sea. On his return to Greece he fought with Sparta against Athens.

Xenophon wrote numerous works, and all of these, it would seem, have come down to us. The chief are a famous work called the *Anabasis*, which describes the expedition of Cyrus already referred to, especially the retreat of the Ten Thousand; the *Memorabilia*, a record of the life and teachings of Socrates; the *Hellenica*, which gives a somewhat dull account of forty-eight years of Greek history and is a continuation of the history of Thucydides, and several minor works. Xenophon's writings are clear and accurate, and are among the best sources of information regarding some of the most important events that have ever happened, but his style is often commonplace and monotonous.

XERXES, *zurk'zeez*, the name borne by three kings of Persia, the most celebrated of whom was Xerxes I.

Xerxes I, the son of Darius I, succeeded to the throne of Persia on his father's death, in 485 B. C. After suppressing a revolt in Egypt, he began to make plans for the invasion of Greece, the preparations for which had been begun by his father. These preparations were on the most enormous scale. Provisions were stored up on the intended route for three years, a transport fleet was collected, the engineering skill of the day was exerted to remove land obstacles and the resources of the vast Persian Empire were taxed to the utmost to produce an armament sufficient to crush Greece. According to ancient computation, the invading army numbered over two million, and although this, possibly, is an exaggeration, it must have been numerically the greatest army on record.

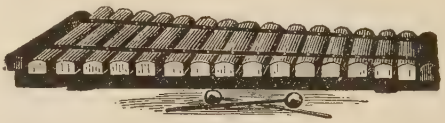
At the head of his enormous host, Xerxes advanced unopposed till he came to Thermopylae, but here his fleet was seriously damaged by a storm, while the narrow pass was effectually held by Leonidas, at the head of a determined, though small, band of Spartans. At last the passage was effected through treachery, and Xerxes marched on through Phocis and Boeotia to Athens, which he entered without opposition. In the meantime the Persian fleet had met with several mishaps. In two engagements with the Greek ships at Artemisium, it had suffered considerable damage, and a storm which occurred between the two conflicts was the cause of still greater loss. Finally, at Salamis (480 B. C.) a naval battle was fought, one of the most decisive in the history of the world, in which the Persians were defeated with terrible loss. Xerxes, who from a lofty eminence had watched the destruction of his fleet, fled panic-stricken to Sardis, leaving in command of his army, Mardonius, who was defeated the following year at Plataea. He spent the rest of his life in obscurity and was murdered by Artabanus, the commander of his bodyguard, who was plotting to make himself king of Persia. He was succeeded by his son Artaxerxes I.

Xerxes II was the son of Artaxerxes I. He was born about 450 B. C. and lived twenty-five years. On the assassination of his parents he ascended the throne but was murdered about a month later.

The third Persian ruler of this name, who was also called Oarses, ruled about 337 B. C.

X-RAY. See Roentgen Rays.

XYLOPHONE, *zī'lo fone,* a musical instrument. Small bars of wood, selected for



XYLOPHONE

their sounding quality, or pieces of metal of graduated length are fastened upon a horizontal frame in such a manner as to form the chromatic scale. The performer plays with two small mallets, one in each hand.

X Y Z CORRESPON'DENCE, the name given to the dispatches sent in 1797–1798 to the United States government by its commissioners, Charles Pinckney, John Marshall and Elbridge Gerry, in Paris. These men were sent to France to settle certain difficulties with that government. On their arrival they were not received officially, but were compelled to communicate with the government through three agents, who informed them that the first step toward negotiation would be the payment of a large sum of money to the Directory, which was then in control of French affairs. The American commissioners, with the exception of Gerry, promptly withdrew and transmitted the correspondence to President Adams, who, in turn, laid it before Congress, substituting for the names of the French commissioners the letters X Y Z. The correspondence aroused the bitterest feeling in the United States, and a naval war with France was actually begun, but the French government receded from its position and thus averted a struggle. See Adams, John.

Y

Y, the twenty-fifth letter of the English alphabet, resembling in its form the Greek upsilon. It is, like *w*, both a consonant and a vowel, but it differs from *w* in that it is often used by itself as a vowel, as in *by, deny, pony*. In this use it is superfluous, as it might be replaced by *i*.

In algebra, *y* stands for the second of the unknown quantities.

YABLONOI, *yah blo noi'*, **MOUNTAINS**, a Siberian range extending from Northern Mongolia in a northeasterly direction about 1,000 miles and merging with the Stanovoi. The highest peaks, at the southern end of the range, attain an altitude of more than 8,000 feet. Many other peaks are 6,000 feet high.

YACHT, *yot*, **AND YACHTING**, *yot' ing*. A sailing boat, used for pleasure, for traveling or for racing, is known as a yacht. There are three principal rigs for sailing yachts—cutter, schooner and yawl. A *cutter* has one mast and a running bowsprit and usually carries four sails, namely, mainsail, gaff-topsail, foresail and jib. A square sail is also frequently set by the larger vessels of this class. A *schooner* has two masts, mainmast and foremast, a standing bowsprit and jib-boom, or not infrequently, instead of these, a running bowsprit, like that of a cutter. A *yawl* is rigged exactly like a cutter, with the addition of a small mizzenmast. It is a very convenient cruising rig and is becoming common for yachts of over 50 tons. Steam yachts are common, and in many localities they are put to practical uses by their owners. The speed attained by some is remarkable.

The history of yachting is the history of yacht racing, inasmuch as competition improved yachts, just as horse racing improved the breed of horses. Very arbitrary rules obtain with reference to the building of yachts for racing purposes. The first international contest between the United States and England took place in 1851, when the *America* defeated fifteen English yachts in their own waters, and won the $500 cup offered by the Royal Yacht Squadron. The trophy has remained ever since in the possession of the New York Yacht Club, though several English yachts have tried to win it back. In 1870 the *Cambria* was defeated. In 1885 the *Genesta* was defeated by the *Puritan*, and a year later the *Galatea* by the *Mayflower*. The *Volunteer*, the *Defender*, the *Reliance* are yachts that have more recently been successful in keeping the cup still in American hands.

The principal competitors have been vessels constructed for the purpose by Sir Thomas Lipton and named the *Shamrock* I, II and III. The races are usually sailed off Sandy Hook. In 1914 Sir Thomas sent the *Shamrock* IV to America for a race, but the outbreak of the World War prevented the contest. During the war most of the better yachts in America were loaned to the government for coast-patrol service. See SAILBOAT AND SAILING.

YAK, an animal of the ox tribe, found only in Tibet, Asia. It is found wild and is the ordinary domestic animal of the inhabitants of that region, supplying milk, food and raiment, as well as serving as a beast of burden. The size is that of a small ox. The horns are long, nearly cylindrical, smooth and pointed at the ends, and they have a peculiar and characteristic curve. Some of the domestic yaks are hornless. Their most remarkable external characteristic is the excessive growth and peculiar distribution of the hair.

The upper parts of the body and sides are clothed with thick, soft, woolly hair, more fully developed along the middle of the back, especially on the shoulders, where it forms a great bunch. From the upper parts of the

limbs and the whole of the lower surface of the body hangs a thick growth of long, straight hair, in old animals sweeping the ground and almost concealing the somewhat short legs. The tail is profusely covered with a thick mass of such hairs. The wild animals are nearly uniformly black; the domestic yaks are often quite white. The silky and tough hair and the skins are often used in the manufacture of caps, coats, blankets and ropes.

YAKIMA, *yak'he mah,* an Indian tribe, formerly living on both sides of the Columbia River and on the northerly branches of the Yakima in Washington. They were mentioned by Lewis and Clark in 1806. In 1855 the United States made a treaty with the Yakima and thirteen other tribes whereby they were required to cede valuable lands to the government and confine themselves to the Yakima reservation. The Indians resorted to war, and it was not till 1859 that the provisions of the treaty could be carried out.

YAKIMA, WASH., the county seat of Yakima County, is on the Yakima River and the Northern Pacific Railroad, the Oregon-Washington Railroad & Navigation Company line and an interurban road, and is about 200 miles southwest of Spokane. It is a distributing center for a large surrounding territory. It has extensive fruit canneries, flour mills, sawmills, other wood-working factories and warehouses. There is a fine Federal building, a Carnegie Library and a hospital. The commission form of government was adopted in 1912. The name was changed from North Yakima in 1917. Population, 1910, 14,082; in 1917, 22,058 (Federal estimate).

YALE UNIVERSITY, a foremost American institution of higher learning, and the third in point of age, as its establishment followed the founding of Harvard and of William and Mary. It is located in New Haven, Conn., and is the outgrowth of a small college founded in 1701 at Saybrook by ten ministers of the colony of Connecticut. In 1716 it was removed to New Haven, where it was permanently located, and two years later it was given the name of Yale College in honor of Elihu Yale, who bestowed upon it a sum of money.

The beginning of the present organization dates from the administration of Timothy Dwight, who was president from 1795 to 1817. During this time, permanent professorships were established, the college grounds were extended and professional schools were planned, but only the medical school was established. President Dwight's successors continued his plan and the other professional schools were organized as rapidly as funds could be provided for their maintenance. In 1887 the state legislature authorized the adoption of the name Yale University.

As now organized, Yale has nine departments of instruction, each under the supervision of a special faculty. They are the College, which confers the degree of Bachelor of Arts; the Sheffield Scientific School, giving both graduate and undergraduate courses; the Graduate School, conferring the degrees of Ph. D. and M. A.; the Medical School; the School of Religion (undenominational); the School of Law; the School of Fine Arts; the School of Music; and the School of Forestry, a graduate department giving the degree of Master of Forestry. At Keene, N. H., there is a school forest of 1,000 acres.

The university is not coeducational, and it lost heavily because of enlistments after America entered the World War. Ordinarily there are over 3,250 students and about 500 instructors. There are about 1,000,000 volumes in the libraries. Among the notable structures are the observatory buildings, the gymnasium, and the Yale "Bowl," one of the largest football amphitheaters in the world. Many eminent men are among the alumni of Yale, including Nathan Hale, Jonathan Edwards, Lyman Beecher, James Kent, John C. Calhoun, Eli Whitney, Samuel F. B. Morse, Noah Webster and William H. Taft.

Elihu Yale (1648–1721), an English merchant and philanthropist, was born near Boston. His father was one of the original settlers of New Haven, Conn. The son was educated in England and began his career as a merchant, engaging in trade in India. From 1687 to 1692 he was governor of the East India Company's fort at Madras. He then returned to England. Mr. Yale became interested in the schools founded at Saybrook and afterwards located at New Haven, Conneticut. During his life he made several bequests to this institution, and in 1718 he announced a large gift. The trustees then honored him by naming the school Yale College.

YALU, *yah loo',* **RIVER**, a river of Eastern Asia, which rises on the eastern borders of China and flows southwestward and south-

ward, forming during its entire course a part of the boundary between China and Chosen (Korea). Its length is about 300 miles, and it is navigable for about thirty miles. At the mouth of this river a famous naval battle was fought in 1894, during which the Japanese destroyed the Chinese fleet. The forcing of the passage of this river at its mouth by the Japanese in 1904 was the first movement in the land operations of the Russo-Japanese War. Since the Japanese annexed Chosen they have called the river Oryoku (*o ri o'ku*). See Russo-Japanese War.

YAM, a plant having edible roots much like the sweet potato. It is found in the temperate and subtropical parts of America, in China

YAM

and in the islands of the Southern Pacific. In Australia and China a species known as *winged yam* produces edible tubers from one and a half to three feet long which sometimes weigh thirty pounds. The skin is dark brown and the reddish flesh is sweet and juicy and very palatable when baked. A large yam is also found in India, though there the small white yam is more in demand for food.

The yam has become an important vegetable in the United States. While it contains less starch than the Irish potato, it contains more nitrogen and a high percentage of sugar.

YANCEY, *yan'sy*, William Lowndes (1814–1863), an American publicist and orator, born in Georgia. He studied law, was admitted to the bar in 1834 and practiced law, at the same time editing a Unionist paper. He removed to Alabama in 1836, became prominent as a lawyer and Whig orator and entered the legislature. Elected to Congress in 1844, he espoused the Southern cause, and after his retirement two years later he became the recognized leader and orator of the radical element in the South.

In the convention which met at Montgomery, Ala., January 7, 1861, he reported the ordinance of secession. He went as a Confederate commissioner to seek European recognition of the independence of the Confederacy, but was unsuccessful. After his return he served in the Confederate Senate until his death. Yancey, though he held office for only two brief periods, was one of the most influential orators of the Civil-War period and did perhaps more than any other man to strengthen among Southerners the desire for secession.

YANG-TSE-KIANG, *yahng' tse kyahng'*, one of the largest rivers of Asia. It rises in the south-central part of the continent, in the plateau of Tibet, flows northeastward, then southeastward, then northeastward; after an irregular course, it enters the Yellow Sea through an estuary about thirty miles wide. Its length is about 3,000 miles. The upper part of the course is between mountains, and the channel is narrow and the stream rapid, often interrupted by rapids and falls. The tide ascends the river for 450 miles, and it is navigable for 600 miles.

The chief tributaries are the Han, from the north, and the Wu, the Heng and the Kan, from the south. Some of these are navigable for considerable distances. The Yang-tse-Kiang brings down large quantities of sediment, and it is estimated that the amount deposited each year is equal to about five-sixths of the amount deposited by the Mississippi. It is connected with the Hoang-ho by the Grand Canal, and it is one of the most important waterways in the Chinese Empire.

YANK'EE, in America, the popular name for a New Englander; in Great Britain it is often applied indiscriminately to the whole population of the United States, and during the World War it was the common designation of the American soldier, regardless of his state. In its origin it was a corruption of the

word *English* as pronounced by the Indians. It seems to have been first applied about 1775 by the British soldiers as a term of reproach to the New Englanders, who themselves afterward adopted it. Since the Civil War the Southern people have applied it to all people of the North.

YANKEE DOODLE, a national song of the United States, sung to a very old tune, which dates from the tenth century. The words, which are mere doggerel, were probably written at the time of the French and Indian War by an English army surgeon, Dr. Richard Schuckburgh, in derision of the ill-trained continental troops. Notwithstanding its mockery, it was taken up by the "Yankee" soldiers and became widely popular.

YANK'TON, S. D., the county seat of Yankton County, sixty-five miles southwest of Sioux Falls, on the Missouri River and on the Great Northern, the Chicago, & North Western and the Chicago, Milwaukee & Saint Paul railroads. The city is the center of a large agricultural and stock-raising district. Its manufactures include flour, cement, bricks and cigars. There are two nurseries. The Yankton College (Congregational) is located here; also the state hospital for the insane. Other notable institutions and buildings are the Sacred Heart Hospital, a Federal building and a Carnegie Library.

Yankton is the oldest settled community in the Dakotas. It was settled in 1858 and was the capital of Dakota Territory until 1883. It adopted the commission form of government in 1910. Population, 1910, 3,787; in 1915, 4,771 (state census).

YAQUI, *yah'ke*, **INDIANS**, a native tribe of the Mexican state of Sonora, numbering about 20,000 and representing a well-developed type of civilization. They are said to be the only Indian tribe that has never been fully subdued by the white man. They made a treaty with the Spaniards in 1610, but their history from 1740 down to the present has been a series of revolts. In 1906 the Mexican government took the extreme measure of attempting to subdue them by deportation to Yucatan. The industries of the Yaquis are agriculture, cattle raising and the manufacture of cotton and woolen stuffs. They also make hats of palm leaves and baskets of reed. Many are employed as laborers in fields and mines.

YARKAND, *yahr kahnd'*, a city situated in the chief oasis of Chinese Turkestan, 100 miles southeast of Kashgar. It is at an elevation of over 3,800 feet, is enclosed by a wall and surrounded by a moat. The buildings are constructed of stone and clay, and most of them are of one story. The city has numerous bazaars, mosques and caravansaries. It is also the seat of some Mohammedan colleges. It is surrounded by an agricultural and stock-raising region and carries on a trade in silk, dyes, leather, wool, tea and sugar. Yarkand is not so important a commercial center as formerly, owing to the fact that railway lines elsewhere have diverted much of its caravan trade. Population, about 70,000.

YARMOUTH, *yahr'muth*, NOVA SCOTIA, the county seat of Yarmouth County and an important seaport, situated on a small bay of the Atlantic Ocean, 205 miles southwest of Halifax. It is the eastern terminus of the Canadian Pacific and the Halifax & Southwestern railroads, and has steamship connection with Boston, Halifax and Saint John. Its commercial prestige is due largely to its fisheries and fish preserving industries and its lumber trade. It has also a woodworking factory, a steel shipbuilding and boiler plant, a shoe factory and a cotton mill for the manufacture of duck and sailcloth. Yarmouth was founded in 1861, and was incorporated as a town in 1890. It is a city of beautiful homes, fine streets and attractive surroundings. Population, 1911, 6,600; in 1916, estimated, 7,000.

YARMOUTH, or **GREAT YARMOUTH**, ENGLAND, a seaport and watering place situated on the east coast, nineteen miles east of Norwich. The town occupies a narrow peninsula between the Yare River and the North Sea, and is connected by bridges with Suffolk and other places on the right bank of the Yare. The river is lined with extensive piers. Yarmouth is an important commercial port, and is the chief center of the herring fisheries of England. Other industries include shipbuilding and the manufacture of ropes, nets and sails. Dickens has described the salty, fishy air of Yarmouth and the charm of its seafaring folk in his novel, *David Copperfield*. Population, about 60,000.

YARN, thread made by twisting the fiber of wool, cotton, flax, silk, hemp or other materials. The yarns are woven into fabrics, or used in knitting, embroidering and sewing. For the process of making yarn, see SPINNING.

YATES, Richard (1818–1873), an American political leader, born in Warsaw, Ky., but taken in childhood to Springfield, Ill. He graduated at Illinois College, Jacksonville, and began the practice of law at Springfield, where he became a prominent Whig. He was elected to the state legislature, serving from 1842 to 1849, and he was a member of Congress from 1851 to 1855. He became a Republican at the organization of the party and was elected governor of Illinois in 1860. During five years' service, he gained fame as one of the greatest of the war governors and was a close friend and adviser of President Lincoln. In 1865 he was elected to the United States Senate, where he served one term. His son, Richard Yates (born 1860), was governor of Illinois from 1901 to 1905, and in 1918 was elected a member of Congress from Illinois.

YAZ'OO, a river of Mississippi, formed by the junction of the Tallahatchie and the Yalabusha. It has a winding course to the south and southwest and enters the Mississippi about five miles above Vicksburg. Its length is 300 miles, and it is navigable for steamboats throughout its course. The name is an Indian word meaning *river of death.*

YEAR, the period of time during which the earth makes one complete revolution in its orbit, or the period which elapses between the sun's leaving either equinoctial point, or either tropic, and its return to the same. This is the *tropical,* or *solar,* year, which is the year in the strict and proper sense of the word. This period comprehends what are called the twelve calendar months, and it is usually considered to commence on January 1, and to end on December 31. It is not quite uniform, but its mean length is 365 days, 5 hours, 48 minutes and 46 seconds. In popular usage, however, the year consists of 365 days, and every fourth year of 366. The extra day is always added to February, and the fourth year is called *leap year.* The *sidereal* year consisting of 365 days, 6 hours, 9 minutes and 9 seconds, is that used in astronomical calculations.

Related Articles. Consult the following titles for additional information:

Calendar
Equinox
Leap Year
Precession of the Equinoxes
Seasons

YEAST, *yeest,* the ferment used in bread-making and in brewing, composed of a mass of small one-celled yeast plants. These cells are so small that 3,000 of them, laid end to end, would scarcely measure an inch. Under favorable conditions they multiply very rapidly, breaking up the sugar in the substance upon which they feed, setting free carbonic acid gas and forming alcohol. Yeast manufactured for commercial purposes may be liquid, dry or compressed in form.

Related Articles. Consult the following titles for additional information:

Bread
Brewing
Fermentation

YEATS, *yeets,* William Butler (1865–), an Irish poet and dramatist, born in Dublin, the son of a distinguished artist. At an early age he turned his attention to literature, and became a leading figure in the Irish literary revival. With Lady Gregory he helped to establish the Irish Literary Theater, from which the Irish National Theater Society developed. He made lecture tours in the United States and Canada in 1903 and 1914. Yeats' peculiar gifts as a dramatist are conspicuous in *Cathleen ni Hoolihan, The Pot of Broth, The Hour Glass, Deirdre* and *The Land of Heart's Desire.* His verse is of the highest lyrical quality, and possesses the same sort of elusive charm that is found in his essays and plays.

YED'DO, Japan. See Tokyo.

YELLOW, one of the three primary colors. Lemon and canary yellow may be taken as pure yellows. Chrome yellow has a slight orange tint. A peculiarity of yellow is that an increase of light seems to strengthen the color; and that the color is also greatly intensified when placed beside its complementary color, blue. Moreover, it reciprocally intensifies the blue. Yellow is the national color of China.

YEL'LOWBIRD. See American Goldfinch.

YELLOW FEVER, an infectious and highly fatal disease of the warm regions of America and Africa, communicated to the human system by the bite of a species of house mosquito. The disease was first recognized in 1647 in the West Indies. In 1691 there was a disastrous epidemic of it in Barbados. In 1878 a severe visitation of the disease in the lower Mississippi valley killed about five thousand persons in New Orleans and Memphis alone. Since the occupation of Cuba and the Canal Zone by the United States, the disease has been practically stamped out in those regions. Proper sewerage, disposal of garbage, isolation of patients and their protection by screens from mosquito bites, dis-

infection of buildings in which cases occur and the destruction of the breeding places of the mosquitoes themselves have proved effective methods of combating the disease.

Yellow fever is so called because the skin of its victims takes on a yellow hue owing to jaundice which spreads over the whole of the body. The onset of the disease takes place three or four days after infection, and is usually characterized by severe chills or rigors. Temperature rises rapidly, and may reach 105° or even higher. In favorable cases the fever abates at the end of the fourth day, and with rest and careful feeding recovery may be complete in two or three weeks. In severe cases blood may be discharged from the bowels and there may be bleeding of the nose or gums. Delirium sets in, and the patient lapses into unconsciousness. Death is due to hemorrhage, heart depression, suppression of the urine or the direct action of poisons upon the vital centers. See MOSQUITO.

YEL'LOW-HAMMER, one of the numerous names of the American golden-winged woodpecker, or flicker. In England the name is applied to the yellow bunting. This bird is bright yellow, with patches of brown. The wings are black, bordered with gold. The bird builds in hedge-rows; the eggs are spotted with red. See FLICKER.

YELLOW JACKET, the common name for any wasp whose body is marked with yellow. See WASP.

YEL'LOWLEGS, an American snipe found in marshes and along shores. It is black and white on head, breast and back, and light underneath. It nests in Canada as far north as the Arctic Circle, laying three or four buff-colored eggs in a depression of the ground. In winter the birds migrate as far south as Argentina, traveling a distance of eight thousand miles twice yearly—the longest migratory flight made by any bird.

YELLOW RACE. See MONGOLIAN RACE.

YELLOW SEA, an arm of the Pacific Ocean, invading the continent of Asia 600 miles, between China and Chosen (Korea). It is connected with the Japan Sea by the Chosen Strait. Its greatest width is 300 miles; its greatest depth, 300 feet. The northern projections form the Chosen, Liao-tung and Pe-chi-li gulfs. Of the rivers flowing into it the largest are the Hoang-ho, the Liao and the Yalu, the latter now known as the Oryoku. The large quantities of yellow mud deposited in it by inflowing streams have given this sea its color and its name.

YEL'LOWSTONE NATIONAL PARK, America's most celebrated wonderland, containing the greatest geyser region in the world, is situated in the northwestern corner of Wyoming, extending over the western and northern boundaries a distance into Idaho and Montana. The park was set apart in 1872 for "the benefit and enjoyment of all the people," and it was the first region thus dedicated by the government. It has a length from north to south of sixty-two miles and a width from east to west of sixty-four miles, and its area of 3,300 square miles makes it about two-thirds the size of Connecticut. On the north and west it includes narrow strips of land from Montana and Idaho, respectively. In 1891 a forest reserve, lying to the south and east of the park, was created by Presidential proclamation and placed under the control of the park authorities. The total area of the two reservations is about 5,500 square miles.

Surface. The central portion of the park consists of a broad plateau, ranging in altitude from 7,000 to 8,500 feet. This plateau is bordered by a number of mountain ranges, in which peaks rise to a height of 11,000 to 12,000 feet. Of these the most important ranges are Absarokas, on the east; the Snowy Mountains, on the northeast; the Gallatin Range, on the north and west, and the Tetons, on the south. The loftiest mountain in the park is Electric Peak, which has an altitude of 11,155 feet. The heighest land in the vicinity is Mount Hayden, more commonly known as the Grand Teton, the highest peak of the Teton Range, having an altitude of 13,671 feet. This stands on the south of the park, just a few miles beyond the boundary.

The mountains are separated from one another by broad plateaus or valleys, and the intermingling of these features gives a diversity to the scenery which is remarkably pleasing. The great valleys are Junction Valley, on the east, which, with its branches, includes the Yellowstone and the Lamar rivers; Hayden Valley, occupying an important tract along the Yellowstone River between Yellowstone Lake and the Great Fall;

GREAT FALLS AND POINT LOOKOUT, YELLOWSTONE NATIONAL PARK

The unobstructed fall of water is 310 feet

the Madison Valley and its extensions, through which flow the Firehole and Gibbon rivers, and in which are located the geyser regions; Swan Lake Flats, Willow Park, the Shoshone and the Paul's River basins.

Rivers. The Yellowstone National Park is drained into three river systems, the Yellowstone, the Missouri and the Snake. The first two find an outlet on the Atlantic slope, while the third reaches the Pacific. The rivers flowing into the Missouri are the Madison, formed by the Gibbon and the Firehole, and the Gallatin. These drain the northwest and west central portions of the park. The southwestern and most of the south central portions are drained into the Snake River, and thence into the Columbia. The eastern and southeastern portions are drained into the Yellowstone, and thence into the Missouri. Between these river systems the Continental Divide passes in an irregular line, entering the park near the southeastern corner and extending in a general northwesterly direction, leaving the western boundary near its middle point. This divide is a plateau, varying in altitude from 7,000 to 8,500 feet. In the southeastern part of the park is the Two Ocean Plateau, so named because rivers having their source in it flow respectively to the Atlantic and to the Pacific. In one locality these rivers come so near each other that during high water streams flowing in both directions are fed from the same source.

Canyons. The rivers are characterized by their clear water, swift current, deep canyons and beautiful cascades. Among the minor canyons worthy of mention are the Golden Gate, the Canyon of the Gibbon and the Canyon of the Gardiner. But surpassing all of these in beauty and grandeur is the Grand Canyon of the Yellowstone, a gorge nearly twenty miles in length and in places over 1,400 feet deep. The upper part of this canyon, for about five miles, consists of bare rocks, noted for the variation and brightness of their coloring. Prominent, among the colors are red, terra cotta, yellow and gray. At the head of this gorge is the Great Fall of the Yellowstone, where the stream makes a perpendicular descent of 310 feet. While other canyons are larger, it is generally conceded by travelers that nowhere else in the world has there been found a natural gorge which, for beauty and grandeur combined, equals the Grand Canyon of the Yellowstone.

Falls. There are over thirty waterfalls in the park. Some of these are small cascades, scarcely worthy of notice, while others are cataracts seldom surpassed for their beauty and grandeur. Among the falls worthy of mention are Gibbon Falls, eighty feet in height; Firehole Falls, upon Firehole River, sixty feet; Kepler Cascade, eighty feet; the Osprey Falls, 150 feet; Tower Falls, 132 feet, and the Falls of the Yellowstone, the upper fall of 112 feet and the lower of 310 feet. The last are the largest and by far the grandest falls of the park.

Lakes. Foremost among the bodies of water in the park is Yellowstone Lake. This sheet of water has an altitude of 7,741 feet and is the largest body of fresh water in the country at so great an altitude. Its area is 139 square miles, its maximum depth, 300 feet, and its shore line about 100 miles. Its waters are cold and swarm with fish. On the shore of the western projection, known as The Thumb, is seen the peculiar proximity of hot and cold water for which this region is noted. Here are several hot springs, whose cones have been built up within the lake, so that they are surrounded by cold water, and one can easily catch fish from the lake and, without moving from his tracks, immerse them in a spring hot enough to cook them. Other lakes of importance are Shoshone, to the south and west of Yellowstone; Louis Lake, south of Shoshone, and Jackson Lake, just across the southern boundary.

Hot Springs. Within the boundaries of the park are found no fewer than 4,000 hot springs and 100 geysers, whose temperatures vary from 60° to 175°. Many of the springs boil and, to a casual observer, would appear to have the temperature of ordinary boiling water; however, much of the ebullition is due to the escape of gas. The most prominent of these springs are the Mammoth Hot Springs, situated about five miles from the Gardiner entrance and near Fort Yellowstone, which is the administrative headquarters. These springs are noted for the beautiful terraces which they have formed, covering in all an area of nearly 200 acres, and varying in altitude from a few feet to nearly 350 feet. These terraces have been formed by the overflow of the water, which is charged with limestone, that is, held in solution while the water is hot; as the water overflows and runs down the side of the crater it evaporates and deposits minute particles of the solidified

lime. Thus, as the years go by, the spring builds up its crater, raising the level of the water higher and higher and increasing the height and extent of the walls which enclose it. These terraces are objects of rare beauty, because of their great variety of coloring. Some are bright yellow; others of a terra cotta hue, while others are nearly white; many have a variety of colors. The water in the springs is remarkably clear, and because of the reflection from the crater it has a peculiar blue color, seen nowhere else.

YELLOWSTONE NATIONAL PARK

Aside from the Mammoth Hot Springs, the smaller springs are quite generally distributed throughout the park, though they are the most numerous in three localities, where they intermingle with the geysers. These localities are the Norris Geyser Basin, the Lower Geyser Basin and the Upper Geyser Basin. Most of the hot springs are merely quiescent pools and are of interest because of the beauty of their coloring. The contrast in coloring is remarkable and is due entirely to the reflection of light from the crater of the spring, since in all cases the water taken from them is transparent. Among these springs of special note are the Turquoise Spring, in the Middle Geyser Basin; Prismatic Lake, a pool of hot water over 150 feet across, under ordinary conditions reflecting all the tints of the rainbow; the Morning Glory Spring, Emerald Pool; Sapphire Pool, and the Punch Bowl, so named because of the form of its crater.

Geysers. There are two classes of geysers —the geysers proper and those known as fountains, which are distinguished by an eruption in which all of the water in the crater is thrown out in the form of a great fountain, leaving the crater empty. The

eruption of a fountain geyser lasts but a few moments; and will not be repeated until the crater is refilled. The most remarkable geysers of this type are the Fountain and the Great Fountain, both in the Lower Geyser Basin. Of the true geysers, Old Faithful, which has an eruption every seventy minutes and throws a jet of water varying from 75 to 125 feet high; the Beehive; the Giant; the Giantess; the Castle, and the Riverside are the most noted. The Giant, when in eruption, expels a column of water five feet in diameter to a height of nearly 250 feet and continues in operation for an hour and a half. The Giantess is even larger, but the eruptions are much less frequent. In general, the larger the geyser the longer the interval between periods of eruption. Most of the interesting geysers are found in the Upper Geyser Basin, where, within an area less than a mile square, nearly all of the large geysers are located. Interspersed among the large geysers are numerous small ones, some of which erupt every few minutes.

Other Objects of Interest. The greater part of the park is covered with beautiful forests of pine, through which the tourist passes on his way from one point of interest to another. The Park is a game preserve. Hunting is strictly prohibited, and the forests now abound in large game, including bears, elk and antelopes. There are also a few wild buffalo, and their number is increasing every year. The care taken of these animals has removed the timidity which generally characterizes them, and they are frequently seen by tourists, while the bears in many instances become very tame. In addition to the more striking features described above, there are many minor objects of interest, such as Obsidian Cliff, a mountain of volcanic glass from 250 to 300 feet in height; the Paint Pots, which are really hot springs, expelling colored clay from their craters, and mud geysers and volcanoes, differing from the other geysers in ejecting turbid water. Roaring Mountain is a hill several hundred feet high, from the openings in whose sides issue jets of steam with such force that they can be heard at quite a distance. In each of the hot spring regions are also found vents, known as *fumeroles,* through which steam escapes with a terrific force.

Tours through the Park. Yellowstone National Park belongs to the people, and anyone can visit it and make a tour to suit his pleasure. He is bound only by such restrictions as are necessary to preserve the natural beauty of the region and to protect the wild animals. Guns are not allowed, and visitors cannot cut growing timber. If they make camp fires, they are required to see that such fires are carefully extinguished before they break camp. Marking or defacing the formations about the geysers in any way is strictly forbidden, and one transgressing in this respect is subject to heavy fine, if caught.

The roads through the park are not excelled anywhere in the country. Automobiles were admitted for the first time in 1915, and now they are used for all transportation. Large hotels, with an equipment equal to those in the largest cities, have been opened at Mammoth Hot Springs, the Upper Geyser Basin, at the Fountain and at the Canyon, and tourists who desire these accommodations can make a trip through the park as comfortably as they can travel the same number of miles in any other region in the world.

Transportation companies operating permanent camps provide equally enjoyable and less expensive accommodations, or parties may travel with their own outfit and set up their camps at their pleasure. However, after their store of provisions has been raided by bears two or three nights in succession, they will probably place themselves in care of one of the transportation companies. The park is entered by three gateways—Gardiner on the north, Cody on the east, and Yellowstone on the west. The Gardiner gateway is the most convenient, because it is on the boundary and nearest to the hot springs and geysers. The regular trip includes a ride of about 150 miles and should take five or six days.

YELLOWSTONE RIVER, a river of the United States, the largest tributary of the Missouri. It rises in Northwestern Wyoming, in the Continental Divide, flows northeast through Montana and into the Missouri a short distance beyond the boundary of North Dakota. Its length is about 1,100 miles. Throughout most of its course the river is followed by the Northern Pacific Railroad.

YE'MEN, a territory of Southwestern Arabia, bordering on the Red Sea. It embraces an area of about 73,800 square miles,

and is a region of mountains and plateaus, from 8,000 to 10,000 feet in altitude. The coast lands are arid, but the valleys are gardens of tropical vegetation. Excellent coffee is grown. The people, numbering about 750,000, are engaged chiefly in stock raising. There are no railroads, but there are several caravan routes from the interior to the coast. Hodeida is the principal port. At the close of the World War there was under way a movement to have Yemen included in a united Arabian state free from Turkish control. See ARABIA; TURKEY.

YEN, the monetary unit of Japan, equivalent to about fifty cents of United States money. The yen was formerly coined in both gold and silver, but in 1897 Japan adopted a gold standard, and since that time no single gold yens have been coined, but two-yen, five-yen, ten-yen and twenty-yen pieces are in common use. The smaller denomination in Japanese money is the sen, equivalent to a half cent. The 5-sen is coined in nickel; 10-sen, 20-sen and 50-sen pieces, in silver.

YENISEI, *yen e say'e*, a river of Asia, one of the longest in the world. From its sources in the Sayansky Mountains, in Northwestern Mongolia, it flows in a general northwesterly direction and enters the Arctic Ocean near the Gulf of Ob, through an estuary about 500 miles long. Above the estuary its length is 2,500 miles. An area of 1,000,000 square miles is drained by it. South of Krasnoyarsk, near which it is crossed by the Trans-Siberian Railway, it is ice-free half the year, and it is navigable to Minusinsk, at the mouth of the Angara River. With its navigable tributaries and canal connections the Yenisei is of the greatest commercial importance to Western Siberia.

YER'KES OBSER'VATORY, an astronomical observatory situated at Williams Bay, an arm of Lake Geneva, Wisconsin. It is owned by the University of Chicago, and was named in honor of Charles Tyson Yerkes, who donated the money for buildings and instruments. The refracting telescope of this observatory is the largest of its kind in the world, having a diameter of forty inches. See TELESCOPE.

YEW, *yu*, an evergreen tree of the pine family, with dense, spreading branches, thickly covered with very dark green linear leaves. The common yew of Europe is very long-lived, and in England it is planted in cemeteries and is considered an emblem of immortality. The leaves and seeds are poisonous, but the red berries are not. The tough, elastic wood was used for making bows in the days before firearms were invented. The American yew is commonly known as *ground hemlock*, and is a low shrub, with straggling branches, common in dense forests.

YGGDRASIL, *ig'dra sil*, in Norse mythology, the enormous ash-tree which binds together heaven, earth and the underworld. It was the tree of life, fate, time and space.

YID'DISH, the dialect spoken by the Jews of Eastern Europe, used by more people than any other Hebrew form of speech. It represents a combination of various languages, notably Hebrew, German, Aramaic and Slavic, and has been carried to all parts of the world. In the United States Yiddish is widely used as a newspaper language, and has been the vehicle of many noted Jewish writers.

YOKOHAMA, *yo ko hah'mah*, JAPAN, the chief commercial center of the empire, is situated on the east coast of Hondo, on the Bay of Tokyo, seven miles southwest of the latter city, with which it is connected by railway. It is on a large harbor, which is protected by breakwaters. The city is well planned and has a number of excellent public buildings. Most important of these are the customhouse, the postoffice, the courthouse and the railway station. The city has a number of modern churches and in most respects resembles a European town. The harbor is lined with massive docks, and the surrounding heights are occupied by fine residences. It is the port through which most visitors enter Japan. The city is the center of a large silk industry, as well as of extensive foreign trade, for it is in direct communication with all of the leading ports of the world. Population, 1916, 428,663.

YONGE, *yung*, CHARLOTTE MARY (1823–1901), a novelist and essayist, born at Otterbourne, England. She was an exceedingly prolific writer, and produced in all about 125 volumes, including novels, short stories, essays, biographies, histories and school books. Her best-known novels are *The Heir of Redclyffe, The Daisy Chain, The Dove in the Eagle's Nest*, and a life of Hannah More. Her historical works include *Cameos of English History, English Church History* and *Landmarks of History*. She gave large sums to schools and to church and missionary work throughout the world.

YON'KERS, N. Y., in Westchester County, on the east bank of the Hudson River and on the New York Central Railroad, fifteen miles from the New York City terminal. It is beautifully located on gradually-rising ground, opposite the Palisades, and its residence section has many beautiful homes of New York business men. It is an important industrial and commercial center, with foundries and machine shops, shipyards, wire works, patent medicine and chemical factories, grain elevators, sugar refineries and manufactories of hats, carpets and rugs. Prominent buildings are a city hall, a Carnegie Library, Saint Joseph's Seminary, the Woman's Institute, the Hollywood Inn for workingmen, the Hebrew Home for the Aged and Infirm and several charitable institutions and hospitals. The Philipse Manor House, now a museum, dates from 1682. There is a steel recreation pavilion on the water front.

Yonkers was settled by the Dutch about 1650. After 1672 it was part of Philipse Manor, until the township of Yonkers was organized in 1788. The settlement itself was called Philipsburg until its incorporation into the village of Yonkers in 1855. In 1872 the northern part of the township was chartered as the city of Yonkers, and the southern part was later annexed to New York City. Population, 1910, 80,475; in 1917, 103,066 (Federal estimate).

YORK, England, county town of Yorkshire, situated on the River Ouse at its confluence with the Foss, 175 miles northwest of London. It is the seat of the York Cathedral, one of the finest Gothic structures in the world, and has many relics and reminders of early and medieval English history. The old city is surrounded by massive stone walls, and has narrow, irregular streets. A beautiful modern suburb has been built on the opposite bank of the Foss. The city's industries include flax spinning and the weaving of linen, iron founding, construction of railway cars, and the manufacture of gloves, combs, glass, etc. There is a thriving river trade. The railway station is one of the finest in Great Britain. Population, 1911, 82,282; in 1914, estimated, 83,380.

YORK, Pa., the county seat of York County, ninety-six miles west of Philadelphia, on Codorus Creek and on the Pennsylvania, the Western Maryland and the Maryland & Pennsylvania railroads. It is situated in a rich and beautiful agricultural valley and has manufactures of foundry and machine shop products, bricks, cement, lime, farm implements, wire, chains, nails, wagons, automobiles, pianos, furniture, wall paper, silk, flour and cigars. Institutions located here are the York Collegiate Institute, the York County Academy, a children's home, a county almshouse, a tuberculosis dispensary and several hospitals. There are a Federal building and two public libraries.

York was settled by Germans in 1734, and the town was laid out in 1741. The Continental Congress met here from September, 1777, to June, 1778, when it was driven from Philadelphia by the approach of Howe's army. The borough was incorporated in 1787, and the city was chartered in 1887. It adopted the commission form of government in 1913. Population, 1910, 44,750; in 1917, 52,770 (Federal estimate).

YORK, House of, a royal family of England, which attempted in the Wars of the Roses to wrest the crown from the Lancastrian House, as represented by the king, Henry VI (see Roses, Wars of the). The Yorkists had, indeed, the superior claim, as Richard, Duke of York, was descended from a third son of Edward III, while Henry VI was descended from a fourth son. Richard died in 1460, and his son continued the struggle; after a short time he was crowned king as Edward IV. With the exception of a short interval, Edward was king until 1483, and after his death his son was crowned king as Edward V. Richard, Duke of Gloucester, the brother of Edward IV, killed his royal nephew and was made king, but was overthrown by Henry Tudor (Henry VII), Earl of Richmond, the head of the Lancastrian House, who united the claims of the two families by marrying Elizabeth, the daughter of Edward IV.

YORKTOWN, Va., the county seat of York County, seventy miles southeast of Richmond. It has filled large space in American history on two occasions. In 1781, in the Revolutionary War, it was fortified by Cornwallis and was captured by American arms only after a siege lasting from August to October. On April 5, 1862, in the Civil War, McClellan, in command of 95,000 Federal soldiers, began a siege of the place, then strongly held by 55,000 Confederates. It capitulated on May 4. In 1881 the Cornwallis surrender was celebrated.

YOSEMITE, *yo sem′ e te,* **NATIONAL PARK AND VALLEY,** one of the most magnificent scenic areas of the American Continent.

Yosemite National Park, a section of the world's "enchanted lands," lies in the central part of California, just west of the Sierra Nevada Mountains. It has an area of a little over 1,100 square miles, and includes the famous Yosemite Valley, the Tuolumne Valley and three groves of sequoias, or California Big Trees.

Yosemite Valley. This valley, which has been aptly described as a "mere crack in the rocks," is one of the most famous of the world's regions. The valley was formed by the Merced River and by glacial action. It is seven miles long, and from one-fourth of a mile to a mile wide. The floor of the valley is a flat meadow carpeted with flowers, and from its sides rise vertical cliffs to heights varying from 3,000 to 6,000 feet. The most widely-known of the great summits guarding the valley are Cathedral Rocks, 2,500 feet; El Capitan, 3,600 feet; Sentinel Dome, 4,100 feet; Half Dome, 4,900 feet, and Cloud's Rest, 6,000 feet.

Over the sides of these cliffs numerous rivers rush headlong to the valley below, forming some of the highest and most beautiful waterfalls in the world. Among them are Yosemite Falls, which drop 1,430 feet in a single fall; Lower Yosemite, immediately below, with a fall of 320 feet; Vernal, 320 feet; Nevada Falls, 600 feet; the celebrated Bridal Veil, 620 feet, and the Ribbon Falls, 1,612 feet. This is one of the highest single falls in the world. These falls are at their best in May and June, when the winter snows are melting. Mirror Lake, in whose waters a remarkable reflection of the surrounding mountains may be seen, is another attractive feature of the valley.

Yosemite Valley is about 150 miles nearly east of San Francisco, and may be reached from Merced on the Santa Fé and Southern Pacific railroads, and by the Yosemite Valley Railroad, which extends to the western border of the park. From the railway terminus stages take tourists through the valley. The roads are good, and during the tourist season, from May 1 to November 1, hotel and camp accommodations are ample. The park is free to all, and anyone is at liberty to provide his own transportation and to travel at his pleasure, subject to such rules as are necessary for the protection of the scenery. From Yosemite Valley roads lead to Mariposa and other groves of Big Trees and to Tuolumne Valley.

Yosemite Valley was discovered in 1851 by a party in pursuit of a band of Indians, who made it their hiding place, supposing it to be inaccessible to white men. In 1864, by act of Congress, it was granted to California for a state park, upon condition that it should be kept for the use of the public and that its scenery should never be injured. The Mariposa grove of big trees, adjoining the valley, was also granted the state at the same time. Since 1890 it has been known as the Yosemite National Park. The most desirable months in which to visit the valley are June, July and the early part of August. Later in the season a number of the streams become dry, and their falls disappear.

YOSHIHITO, *yosh i he′toh,* HARUNOMIA (1879–), emperor of Japan, succeeded to the throne on the death of his father, Mutsuhito, July 29, 1912. He was educated at Tokyo, and speaks fluently French, English and German. He is simple and direct in his manner and speech, and his policy is progressive. Much tact and discretion have been shown by him as a harmonizing influence between the traditions and ideals of old Japan and the up-to-date ideas of the Western world, with which Japan must keep abreast to maintain its position as a world power. The emperor's personal taste inclines toward outdoor sports, and he is a lover of dogs and horses. In 1900 he married his cousin, Princess Sada-Ko, and has three children, the oldest, Hirohito, being the heir apparent to the throne.

YOUNG, *yung,* BRIGHAM (1801–1877), the sucessor of Joseph Smith as president of the Church of Jesus Christ of Latter-Day Saints. His father was a Vermont farmer, and he himself learned the trades of painter and glazier. Early in life he joined the Baptists, but was converted to Mormonism and joined the sect at Kirtland, Ohio, in 1832. In 1835 he was ordained one of the Council of Twelve Apostles. When the sect began to be persecuted Young and Smith selected Nauvoo, Ill., as the site for a new

colony. On the death of Joseph Smith, in 1844, Young was unanimously chosen president.

When the Mormons were expelled from Nauvoo he led them through toils and dangers over the plains and tablelands to the splendid valley where, between the Wasatches and the Great Salt Lake, he founded, in July, 1847, the settlement which became Salt Lake City. The Mormons organized their territory into a state, and Young became governor. Later, difficulties arose with the Federal government and President Buchanan appointed a territorial governor to succeed Young. He continued ruler of his sect until his death in 1877. He was a man of strong character, remarkable foresight and unusual executive ability.

YOUNG, Charles Augustus (1834–1907), an American astronomer, who graduated at Dartmouth in 1853 and after teaching at Phillips Academy, Andover, in 1856 became professor of natural philosopy and mathematics in the Western Reserve College, Ohio. In 1877 he was appointed professor of astronomy and natural philosophy at Princeton, after serving in the same capacity at Dartmouth. Young made the first observation of the spectrum of the solar corona (the luminous envelopes of the sun) in August, 1869, and later he made many other important observations. He gave his assistance to the eclipse observations in Iowa in 1869, in Spain in 1870, in Denver in 1878, and was one of the party who studied the transit of Venus at Peking in 1874. He was one of the foremost authorities on the subject of spectra. *The Sun, General Astronomy, Elements in Astronomy* and *Lessons in Astronomy* are among his publications, which include also textbooks and papers on miscellaneous scientific subjects.

YOUNG, Edward (1683–1765), an English poet, born at Upham, Hampshire. His earliest large work was *Busiris,* a tragedy written in 1719. This was followed by *Revenge* and a group of satires entitled *The Love of Fame, the Universal Passion.* He took holy orders, and in 1730 became rector of a church at Welwyn in Hertfordshire. Young is chiefly remembered for his *Night Thoughts of Life, Death and Immortality,* a religious poem containing numerous pointed verses which have become axiomatic.

YOUNG, Ella Flagg (1845–1918), a prominent American educator. Mrs. Young was educated in the public schools of Chicago, graduating from a Chicago high school and from the Chicago Normal School. In 1900 she received the degree of Ph.D. from the University of Chicago. She began teaching in 1862, making rapid advancement in her profession. From 1887 until 1899 she was district superintendent of the schools in Chicago, and from 1899 until 1905, she held a professorship in the University of Chicago in the department of education. In 1905 she was chosen principal of the Chicago Normal School, and was one of the most efficient principals that institution ever had. In 1909 she was unanimously elected superintendent of schools in Chicago, one of the most important educational positions in the United States. Her work as superintendent of schools was such as to command the highest admiration. In 1910 Mrs. Young was honored with election to the presidency of the National Education Association, the first woman to hold that position. In the same year she was also elected president of the Illinois State Teachers' Association.

YOUNG ITALY, a society founded by Mazzini in 1831 for the purpose of freeing Italy from Austrian rule and uniting the different states as a republic. The first open movement, the invasion of Savoy in 1834, failed, and this fact lessened the influence of the society. Its work was not entirely vain, however, as it contributed greatly to the growth of the patriotism which resulted later in the unification of Italy.

YOUNG MEN'S CHRISTIAN ASSOCIATION, or the "Y. M. C. A.," is an organization for the promotion of spiritual, intellectual, physical and social welfare among men. Its purpose is not to supplant the work of the Church, but to coöperate with all churches in the promotion of welfare work among men and boys. The object of the organization at its beginning was the conversion of men to Christianity and the strengthening of the Christian life of its members, but its scope has broadened to include the union of Christians of all denominations in lines of work that can be promoted by united action; to carry the gospel among the railroad and other workers; to unite college students for active Christian work; to cooperate with foreign Christian young men for the salvation of their fellows; to bring together in sympathy and companionship for Christian work the young men of every sec-

tion of the United States and Canada; to secure the services of, and financial aid from, Christian laymen in spreading the gospel, and generally to promote the common cause and extend religion among all orders and conditions of men. In pursuit of the accomplishment of these objects, the association has founded missions, secured positions for young men, strangers and penniless in cities and in the country; acted in capacities of nurses and humanitarians; secured legislation against the publication and circulation of obscene literature; officiated as almoners for the distribution of funds, food and clothing among the deserving poor; established schools, libraries and lectures, and exerted a powerful influence for the general good.

The association has established comfortable homes and hotels in large cities, and any young man for a nominal membership fee is admitted to the privileges which these buildings afford. The general buildings are equipped with reading rooms, libraries, gymnasiums and recreation rooms, and many of them are provided with swimming pools that are open the year round. In the largest centers Bible classes, lectures and social entertainments are provided, and in Chicago, Springfield, Mass., Los Angeles, Philadelphia and New York practically all lines of educational work, from that in the elementary schools to that of college grade, are offered.

There are special branches for railroad men, college students, soldiers and sailors, Indians and negroes, and the field work has been extended to many rural communities. A boys' department is a large and important feature of the organization, and branches of this department are found in nearly all city and county organizations. Secretaries who are especially trained devote all their time to the boys' work. Classes and separate rooms are provided for their use, and many summer camps are maintained under the direction of the secretaries.

The executive officers have the title of secretary; most of them are university men, or men who have received special training in the Y. M. C. A. colleges, at Chicago or Springfield, Mass. Special summer schools are also maintained at Lake George, N. Y., and at Lake Geneva, Wis. In 1918 there were in America 2,193 associations, 674,000 members and 4,963 employed secretaries and other officers. The students in the educational classes numbered 82,000, and the membership in the boys' department was over 152,000. The net property of the association and funds amounted to $107,707,200. Membership is open to men without regard to creed, race or color, but only those who are members of evangelical churches can vote on constitutional questions and hold office.

Work in the World War. At the outbreak of the World War the British associations began work among the troops in practically every training camp and at the front, and over 700 centers containing reading and recreation rooms were established. When the United States entered the war, the association offered its services to the government, and immediately started a campaign to raise funds for establishing centers at the various training camps for the regular army. The sum of $50,000,000 was secured, and additional funds were raised for carrying on the work in Europe. On January 1, 1918, the association had sent 800 workers to France, including 150 women, who served in the canteens.

The Y. M. C. A. centers at the front, known as huts, included a canteen room, or restaurant, small rooms for classes and other gatherings and a lecture hall. Before the close of the war there were 4,557 secretaries serving the soldiers in camps at home and 7,000 with the expeditionary forces in France. At the earnest request of the governments of France, Italy and Russia, Y. M. C. A. representatives were sent among their armies. The work was costing the association over $7,000,000 a month when the armistice was signed.

The work of the Y. M. C. A. was of the greatest value to the armies; it relieved homesickness, provided recreation, strengthened the morale of the troops and offered religious teaching and classes in various lines of educational work. In addition to this, the work among prisoners of war resulted in relief from much suffering.

History. The first Y. M. C. A. association was formed during 1845, when George Williams of London, England, a clerk sixteen years of age, persuaded his fellow clerks to meet for prayer and Bible study. But similar movements had existed in England from 1632. The first American Association was formed in Boston in December, 1851. Since that date, associations have been organized in nearly every city, town and village of the United States and Canada.

The associations are organized into city, county and state groups. Many of the associations have become incorporated under the laws of the several states wherein they are domiciled and are clothed with powers and privileges of corporate bodies. In 1883 the international committee, composed of twenty-seven members, was incorporated under the laws of the State of New York, and in 1888 delegates from the United States were in attendance upon the international convention held at Stockholm, Sweden. The headquarters of the central international committee are at Geneva, Switzerland, and the committee is composed of representatives from America, Australia, Austria-Hungary, Belgium, Denmark, England, France, Germany, Italy, Netherlands, Norway, Russia, Spain, Sweden, Switzerland and other countries.

YOUNGS'TOWN, Ohio, the county seat of Mahoning County, sixty-seven miles southeast of Cleveland, on the Mahoning River and on the Erie, the Pennsylvania, the Baltimore & Ohio, the Mahoning Valley, the New York Central, the Pittsburgh & Lake Erie and the Lake Erie & Eastern railroads. The manufacture of iron and steel is the most important industry, and there are also lumber mills, bridge works, and furniture, engine, automobile, wagon and other factories. Youngstown is the seat of a number of charitable institutions and hospitals, and has a Federal building and the McMillan Free Library. Mill Creek Park, 482 acres in extent, is regarded as the most beautiful natural park in the state of Ohio. The first settlement was made by John Young on a tract of land purchased from the Connecticut Land Company in 1797. It became the county seat in 1876, and was incorporated as a city in 1848. Population, 1910, 79,066; in 1917, 112,282 (Federal estimate).

YOUNG TURKS, the name applied to a reform party which forced the abdication of Sultan Abd-ul-Hamid in 1909. It was thought by observers in other countries that the revolt foreshadowed a new era of democracy in the Ottoman Empire, but this was a mistaken idea. The strengthening of Turkish power in various sections of the empire seemed to be the chief object of the Young Turks, and no material political reforms resulted. See Turkey.

YOUNG WOMEN'S CHRISTIAN ASSOCIATION, an international association of women operated on a plan similar to that of the Young Men's Christian Association, its purpose being to promote the welfare of young women, chiefly women in business everywhere. Organized in 1894, it to-day embraces eighteen national organizations scattered throughout the world, and has a total membership of 800,000. The headquarters are in London.

The American Y. W. C. A., formed in 1906, was an outgrowth of the Ladies' Christian Association, a society which had been organized in 1858 in New York and which had established many branches in the fifty years of its growth. At present there are about 1,000 associations in the United States, with a total membership of 350,000. An annual *Year Book* is published, showing what has been accomplished in the twelve months immediately preceding. In Canada there are about seventy-five affiliated bodies, with a total membership of 18,000. *The Association Monthly* is the official organ of the international association.

YPRES, *ē'pr'*, Belgium, a ruined city which was the center of desperate fighting throughout the World War. It was the capital of West Flanders, and was situated thirty-five miles south of Ostend, on the Yperlée River. On October 3, 1914, it was occupied by the Germans, who were driven out by the British a few weeks later. The allied forces continued to hold the Ypres line, but at the cost of much sanguinary fighting. In the spring of 1915 a new attack was delivered by the Germans, in which they used poison gas for the first time. Only the heroic resistance of the Canadians saved the day for the allies, who managed to hold the town after suffering great losses. Even as late as the spring of 1918 the salient was the scene of most desperate struggles, but the ruins of the city remained in allied hands. Before the war Ypres had a population of 17,000, and was a center of the lace and linen trade. It had many fine buildings, including the beautiful cathedral of Saint Martin, dating from the thirteenth century. The soldiers called the place "Wipers." See World War.

YPSILANTI, *ip se lan'te*, Mich., in Washtenaw County, thirty miles southwest of Detroit, on the Huron River and on the Michigan Central and the New York Central (Lake Shore & Michigan Southern) railroads. Interurban lines connect it with Detroit and Ann Arbor. It is the business center for a considerable agricultural region, and is con-

nected by several electric railways with other cities. The principal manufactures are flour, paper, knit goods, dairy products and agricultural implements. The Michigan State Normal College, the first normal school to be established west of Massachusetts, is located here, and the city has parks, two banks, a business college, public and school libraries and a Federal building. The town was laid out in 1825 on the site of an Indian trading post. It was chartered as a city in 1858. Population, 1910, 6,230.

YSAYE, *e zah'ye*, EUGENE (1858–), a Belgian violinist, born at Liége. He was taught by his father, an able violinist, who in time sent him to the Liége conservatory. Subsequently he studied under great masters of the violin. He showed such promise that the state helped him to complete his studies at Paris. In 1881 he began the concert tours which were to reveal him to the world as one of its foremost violinists. Five years later he became director of the violin department of the Brussels conservatory, where he organized the famous Ysaye quartet. He retired in 1898 to devote all his time to concert work. Ysaye's playing is characterized by a sound and brilliant technique and a rich, full tone having an infinite variety of shading. He has written a number of compositions for the violin; among them are six concertos.

YUAN SHI KAI (1858–1916), Chinese statesman, first President of China. As a young man his fondness for military life led him to active service in Korea, where his work attracted the notice of Li Hung Chang, and brought him the office of resident-commissioner of trade. His rise was rapid, and during the Boxer rebellion he gained an international reputation for his efforts to protect foreigners. Though a supporter of the monarchy, Yuan Shi Kai was a reformer. His innovations finally led to his dismissal from power in 1908, but in 1911 he was recalled to the office of Premier. He tried to bring about a compromise between the Manchus, the constitutional reformers and the revolutionists. After the abdication of the emperor in 1912, Yuan Shi Kai, "the strong man of China," became the first regular President of the Chinese Republic. Yuan, however, soon showed a disposition to take the government into his own hands and by 1914 he was exercising the power of dictator. Late in 1915 it was announced that the Presidency would thereafter be hereditary in Yuan's family, and in December he was proclaimed emperor. Before it was possible to have a coronation ceremony, mutinies, revolts and intervention by the powers caused a restoration of the republic. In June, 1916, Yuan died, by poisoning, according to reports. See CHINA, subhead *History*.

YUCATAN, *yoo kah tahn'*, a peninsula constituting the extreme southeastern part of Mexico and embracing the states of Campeachy and Yucatan. It projects northward between the Gulf of Mexico and the Caribbean Sea, and is a trifle smaller than the state of Iowa. There are extensive coral formations in the shallow waters along its shores. The climate is hot and humid, and the principal product is sisal hemp, the world's chief supply, 200,000,000 pounds annually coming from this source. The population is made up of natives, chiefly Yaqui Indians, and Spaniards. The natives are intelligent and dependable laborers. Within the peninsula are interesting remains of the ancient race of Maya Indians. See MEXICO.

YUC'CA, a genus of plants belonging to the lily family, native of North America. Yuccas are common in Mexico. A species known as *Adam's needle* is characterized by a profusion of beautiful, bell-shaped flowers and long evergreen leaves. The *Yucca gloriosa* has a two-foot stem, on the end of which grows a cluster of leaves and in the midst of the leaf-cluster a flower stalk bearing numerous drooping bells, striped with purple. The *Yucca glauca* of the western part of the United States has a fiber suitable for making cordage and baskets. The Mexican Yucca tree bears a juicy fruit.

YUKON RIVER, one of the largest rivers of North America. It rises in the west central part of the District of Yukon, Canada, flows northward and northwestward into Alaska, then westward and southwestward, entering Bering Sea sixty miles southwest of Michael. Its total length is about 2,200 miles. It is fed by numerous streams which are the outlets of marshes and lakes. In some places the current is swift and the river is obstructed by rapids. Small steamers have descended all these rapids, but those at White Horse form an impassable barrier to up-river steamers, so that the river is divided into two navigable sections, which are now connected by railway. The discovery of gold in the Klondike region and along the banks of the Yukon has brought this stream into special

prominence since 1896. During the open season steamers make regular trips as far as White Horse, and smaller boats go to Dawson, in the Canadian Yukon Territory.

YUKON TERRITORY, a political division of the Dominion of Canada, popularly called THE YUKON. It is located in the extreme northwest, between the North West Territories on the east and Alaska on the west. British Columbia bounds the territory on the south, and the Arctic Ocean is on the north. The sixtieth parallel forms the dividing line between the Yukon and British Columbia, and the 141st meridian (W.) the line between the territory and Alaska. The North West Territories and the Yukon are separated by the Rocky Mountains.

Having an area of 207,076 square miles, the Yukon is about one-half the size of Ontario, one-sixth the size of the North West Territories, and lacks about 59,000 square miles of being as large as Texas. It is almost exactly twice the size of Colorado. Of the total area, 649 square miles are water. The territory is irregularly triangular in shape, the broadest portion being the southern boundary, and the narrowest the Arctic shore line. It is sparsely populated, the census of 1911 showing 8,512 inhabitants. In 1901, during the gold-mining boom, the population was 27,219. Dawson, the capital, is the chief town. It has a population of about 4,000.

Physical Features. In general the surface of the territory is a rolling plain diversified by mountains and river valleys. The average elevation is from 2,000 to 3,000 feet, but in the extreme southwest, near the Alaska border, Mount Logan towers 19,539 feet above the sea. It is the highest peak in Canada, and next to Mount McKinley is the highest in North America. There are several other peaks in this region which are from 15,000 to 18,000 feet in altitude. Branches of the Yukon River traverse the territory over most of its area, but the southeastern corner is drained by the Liard River, which belongs to the Mackenzie River system.

Resources and Industries. Gold is by far the most valuable resource of the Yukon. In 1896 rich deposits were discovered in the Klondike, near the Alaska boundary, and when the fact became known thousands of prospectors flocked to the district to make their fortunes. In 1900, when the boom was at its height, gold to the value of $22,275,000 was taken from the mines. After the exhaustion of the placer deposits, more expensive methods of mining were introduced, which caused a marked decline in yield and in the population of the region. The yearly output is now valued at about $5,000,000.

There are no other industries of importance, though home requirements are partially met by farming and manufacturing, carried on in a small way. Small crops of rye, barley and garden vegetables are produced. The summers are very short and frosts occur throughout the year, but these disadvantages are somewhat offset by the long summer days. At Dawson the longest days have about twenty hours of daylight.

Government. Before the discovery of gold in the Yukon, the territory was inhabited only by a few Indians, but the sensational finds in the Klondike brought large numbers of settlers into the region. Parliament then organized a government to meet the requirements of the population. The territory is now governed by a commissioner appointed by the governor-general in council, and a territorial council. Any voter may be a councillor, but the qualifications of voters are determined by the commissioner and his council. To be eligible to vote a man must be over twenty-one years of age and must have resided in the district for at least twelve months previous to the election.

Related Articles. Consult the following titles for additional information:
Alaska
Dawson
Klondike
Yukon River

YU'MA, a small tribe of Indians, formerly residing on both sides of the Rio Colorado about fifty or sixty miles from the mouth of the river, and now confined to a reservation in Southeastern California. They are a fine tribe physically, and are in no sense nomadic, seldom leaving their villages, where they practice a rude form of agriculture, raising corn, beans, pumpkins and melons. They number about 800.

Z, the twenty-sixth and last letter of the English alphabet, occupying the same position as in Latin. It is derived, through the Greek and Latin, from the Phoenician alphabet, in which, however, it was the seventh character. In English *z* was little used before the fifteenth century. It is properly a double consonant, compounded of *d* and *s*, but it has acquired the pronunciation of the hard terminal *s*. *S* or *ss* is, indeed, frequently used in place of *z*, as in *choose, dissolve*.

ZAMBE'ZI, a river of Southern Africa, which rises in the eastern part of Angola, where it is formed by the union of several smaller streams, generally known as the Seven Springs. It flows southward, eastward, northeastward and then southeastward, finally entering the Mozambique Channel through a number of delta arms. For a part of its course it forms the boundary between Rhodesia and German Southwest Africa. Its upper course is through an expanse of country clothed with grass and forest. After entering Rhodesia it plunges over a precipice nearly 400 feet high, forming the celebrated Victoria Falls (see VICTORIA FALLS). Below the falls the river has a winding course of about eighty miles through a deep canyon, with almost perpendicular banks. In its lower course it flows through a low, open country.

Its entire length is about 1,650 miles. It is navigable for large steamers to the first series of rapids, 400 miles from the sea. Above this point another section is navigable to Zumbo, on the western border of Portuguese East Africa. Several lines of steamers ply regularly upon the river, and the Cape-to-Cairo railway crosses it on a magnificent steel bridge erected just below Victoria Falls. The Zambezi is the fourth river in Africa in size and, together with its tributaries, exceeds 4,000 miles in length. The first European to see the river was Livingstone, who reached it in 1854.

ZANESVILLE, *zaynz'vil*, OHIO, the county seat of Muskingum County, sixty miles east of Columbus, on the Muskingum River, at the mouth of the Licking, and on the Baltimore & Ohio, the Pennsylvania, the Wabash, the New York Central, the Wheeling & Lake Erie and the Ohio River & Western railroads. The surrounding country is a farming region, and it also contains deposits of limestone, clay and coal. The rivers furnish good water power, and there are potteries, terra cotta works, paving block plants, tube mill and sheet mill plants, railroad shops, implement and wagon works, flour mills and other factories. The tile plant is said to be the largest in the world. The city has a Federal building, a courthouse, a Carnegie Library, a Masonic Temple, an Odd Fellows' Hall and a Soldiers' and Sailors' Memorial Hall. A city market supplies provisions to the population at low cost. The town was founded by Jonathan Zane and John McIntire in 1799. It was the capital of the state from 1810 to 1812, and was incorporated in 1814. Population, 1910, 28,026; in 1917, 31,320 (Federal estimate).

ZANG'WILL, ISRAEL (1864–), a British miscellaneous writer, born in London, of Jewish parentage. He was educated at the Jews' Free School, Spitalfields, London. His lectures in England, Ireland and the United States brought him prominently before the public, and he became a leader in the Zionist Movement (which see). His writings include essays, dramas, novels and humorous sketches; he is particularly clever in depicting Jewish life and character. Early Jewish studies are *Children of the Ghetto* and *Ghetto Tragedies*. *Dreamers of the Ghetto* contains sketches of great Jewish thinkers. *The Mantle of Elijah, They That*

Walk in Darkness and *Ghetto Comedies* are among his other writings. His most successful plays are *Merely Mary Ann* and *The Melting Pot.*

ZANZIBAR, *zahn ze bahr',* an island off the eastern coast of Africa, forming a part of the British protectorate of Zanzibar. Its area is 640 square miles, and it is mostly low, the highest point being only 1,000 feet above the sea. The island is fertile and well cultivated. Cloves, copra, tobacco, vanilla, cocoanuts and other crops are grown. Fishing and cattle raising are important industries. The population, numbering about 197,000, includes Arabs, Persians and representatives of most of the native tribes of Eastern Africa. There are only a few Europeans. Mohammedanism is the chief religion.

Zanzibar, the capital and chief town of the island, contains the palaces of the sultan, the barracks, the fort, hospitals and a number of mission stations. It is an important port in the Eastern trade and has some manufactories. The population is 35,262.

The nominal head of the government is a native sultan, born in 1907. The island is administered by a British consul general.

ZEALAND, *ze'land,* the largest and most easterly island belonging to Denmark, containing Copenhagen, the capital and largest city of the kingdom. It is situated between the peninsula of Jutland and Sweden, and its outline is very irregular. The greatest length from north to south is eighty miles, its greatest breadth is sixty-five miles, and the area is 2,680 square miles. Most of the island is low, the greatest elevation not exceeding 400 feet. The land is covered with forests or fertile fields. Population, 1911, 1,096,897.

ZE'BRA, a wild animal of South Africa, closely related to the wild ass and the horse, and having habits similar to those of the latter. It is grayish or cream-white in color, and is conspicuously marked with dark stripes on head, legs and body. In Africa zebra-hunting is a popular sport. The natives eat the flesh and use the hides for leather and as rugs. Until comparatively recent times great herds of zebras were common in Southern Africa; to-day the animals are rare. The zebra most frequently seen in Africa and in menageries is Burchell's zebra, whose native heath is the central plains. See QUAGGA.

ZEBRA

ZE'BU, a species of ox, a native of India, whence it has spread into Persia, Arabia and Eastern Africa. It is used as a beast of burden, for plowing and hauling. The animal is remarkable for a convex forehead, short horns, large drooping ears and a fatty hump on the back. It is very gentle and docile.

ZEBU

Zebus vary greatly in size, the smallest being no larger than a large dog, while others are the size of a large ox. The colors vary. The white zebu bulls are regarded as sacred among the Hindus (who call them *brahmany*) and are allowed a free range. Zebus have been imported to Jamaica and Central America for use on farms.

ZEB'ULUN, one of the twelve tribes of Israel, named, according to Genesis XXX, 20, after the sixth son of Jacob and Leah. The name was also given to a country in Northern Palestine.

ZECHARIAH, *zek a ri'ah,* son of Berechiah, son of Iddo, appeared as a prophet in Jerusalem, along with Haggai, in the second year of Darius Hystaspes (520 B. C.), encouraging the Jews to commence the restoration of the Temple.

ZEDEKI'AH, last king of Judah, the son of Josiah, and successor of Jehoiachim. He broke his oath of allegiance to Nebuchadnezzar and united with Egypt against him. He was made captive when Nebuchadnezzar conquered Jerusalem in 586 B. C., his sons were killed in his presence, and he was taken a prisoner to Babylon, where he died. The name was borne also by two false prophets.

ZEISLER, FANNY BLOOMFIELD. See BLOOMFIELD-ZEISLER, FANNY.

ZEMST'VO, the governing body of a province or district in Russia before the revolution

of 1917. It was composed of representatives chosen by the peasants, the householders of the towns and the landed proprietors. This body was presided over by the president of the nobility of the district or province, and it was charged with the administration of economic affairs. The executive power of the zemstvo was entrusted to an *upraba,* elected by the assembly. See RUSSIA.

ZENANA, *ze nah'nah,* among the Hindus that part of the house set apart for women. In Bengal the women occupy a separate building behind that of the men; the rooms open upon an inner court, and the inmates are entirely separated from the outside world. In 1855 Protestant missionaries organized the Zenana Mission for the purpose of alleviating the conditions of zenana inmates.

ZEND-AVES'TA, the sacred book of the Parsees, a religious sect of India, followers of Zoroaster. It contains songs of praise, prayers, the liturgy and a priestly code. It was first translated in 1771 by Anquetil-Duperron, a French scientist.

ZE'NITH, a term used in astronomy to indicate the point in the heavens directly overhead. It is opposite of nadir (which see).

ZE'NO, the founder of the Stoic school of philosophy, was born of a merchant family of Citium, in Cyprus, about the middle of the fourth century B. C., and is said to have lived about eighty years. According to tradition, he was shipwrecked and went to Athens, where he first read the works of Socrates' disciples. He studied Cynic doctrine, then turned to Stilpo, later to the teachings of Xenocrates and of Polemo. He then founded at Athens a school of philosophy in what was called the "Painted Porch," where he is said to have taught fifty-eight years. He practiced and taught temperance and virtue and was much esteemed by his fellow citizens, who erected a bronze monument to his memory after his death. See STOICISM.

ZENO'BIA, queen of Palmyra, Arabia, who succeeded to the throne as regent for her son, on the murder of her husband, Odenathus, in A. D. 267. She aimed at a dominion which should include Egypt, Syria and Asia Minor, and should make good her title of "Queen of the East." Her ambitions clashed with Rome, and in 272 her armies were defeated by those of Aurelian. She was taken captive to Rome, but the emperor was so impressed with her beauty and elevation of character that he gave her a villa on the Tiber, and Zenobia's daughters were married into noble Roman families.

ZEPHANIAH, *zef a ni'ah,* a Hebrew prophet, who flourished in the reign of Josiah, 600 B. C. His book of three chapters, the ninth of the Minor Prophets, predicts the desolation of Judea, as a punishment for idolatry and worldliness.

ZEPPELIN, *tsep e leen',* COUNT FERDINAND (1838–1917), a celebrated aeronaut, born in Constance, Germany. He was educated at the Polytechnical School in Stuttgart and at the military school at Ludwigsburg. In the Franco-German War he was promoted to the rank of lieutenant-general. After many experiments with dirigible balloons, of which he was the inventor, he made his first flight from Berne to Lucerne in 1892. After this he made numerous models and improvements and in 1913 constructed a passenger airship which traveled from Baden-Baden to Vienna in eight hours, half the time required for the trip by train. A Zeppelin designed for trans-oceanic travel exploded in mid-air in 1913, destroying all on board. Zeppelins were much used in the World War, but did not fulfill the expectations of their makers as vehicles for bombing or scouting expeditions, being outstripped for war purposes by the lighter and swifter aeroplane. See FLYING MACHINE.

ZE'RO, in mathematics, a symbol (0) denoting the absence of quantity or value; also, the symbol of an infinitesimal quantity. The same term is used to represent the point from which measurement is recorded on a scale. It is also used on thermometers. In this connection, however, zero does not denote temperature. On centigrade thermometers it indicates the freezing point of water; on the Fahrenheit scale it indicates 32° below the freezing point. Entire absence of heat, scientists agree, is represented by a temperature of 273 degrees (C.) below zero. See THERMOMETER.

ZEUS, *zuse.* See JUPITER.

ZEUXIS, *zuke'sis,* a famous Greek painter, probably born at Heraclea, on the Euxine, about 450 B. C. Time has effaced his masterpieces—*Hercules Strangling the Serpent, Jupiter among the Gods, Marsyas Bound, Pan and Helen*—which were the admiration of ancient critics. Zeuxis was a contemporary of the celebrated painter Parrhasius. See PAINTING.

ZINC, *zink,* or **SPEL'TER**, a metallic element, in appearance resembling lead but much harder than the latter metal and about one-third as heavy. At 212° it becomes malleable, at 302° it can be drawn out into fine wire. It is obtained from ores, and is one of the most useful metals known. The principal zinc ores are the carbonate, or *Smithsonite;* the oxide, or *zincite;* the hydrated silicate, or *calamine;* and the sulphide, or *sphalerite,* commonly called *zinc blende.* From the last most of the zinc of commerce is obtained. Deposits of zinc ore occur in most of the countries of Europe; in the United States the ores are found chiefly in Missouri, Kansas, New Jersey, Pennsylvania, Wisconsin, Tennessee and Arkansas. British Columbia is a source of supply. The Missouri and Kansas mines are the most important in America, producing about sixty per cent of the country's total annual output of 600,000 tons. Zinc is known in the trade as spelter.

Commercial zinc is produced chiefly by a smelting process. The ore is roasted; the oxide thus set free is heated with charcoal in earthen pipes, and the powder is reduced to a liquid in iron crucibles. Zinc is marketed in the form of sheets and small bars. It is employed in the arts, especially in the manufacture of brass, German silver and other alloys, and in making printing plates for etchings. It is also used in making the positive plates for electric batteries, in galvanizing iron sheets for roofing and iron wire for telegraphs; in lining tanks and in protecting woodwork from the heat of stoves.

Among the most important commercially of the compounds of zinc are *zinc chloride,* a compound of zinc and chlorine, used in medicine as a caustic, a disinfectant and a deodorizer. It is a preservative of timber, the chloride solution being forced under pressure into the pores of the wood. Railway ties are treated in this way. The same compound is also used to add weight to cotton goods. *Zinc sulphate,* formerly known as *white vitriol,* is a white powder used in dyeing and calico printing, in the manufacture of varnishes and drying oils, and in the preparation of zinc white (used in making white paint for interiors) and other zinc compounds.

ZINC ETCHING, a plate for the reproduction in printing of drawings or lettering in ink; also the process by which it is made, sometimes called the line-cut process. A photograph on glass is made of the drawing, and the negative, reversed, is clamped to a highly-polished plate of zinc which has been coated with wax or some other substance to protect it from the action of acid. The zinc plate is then subjected to electric light or to sunlight till the drawing is transferred to the sensitized surface, the lines are etched by means of a corrosive acid, and the plate is nailed to a block to make it the same height as type. Zinc etchings are quickly and inexpensively made, and for this reason are commonly used in the illustration of newspapers and many books. For the reproduction of photographs and other pictures, in which it is necessary to preserve the shading, the more complex halftone process must be used. See HALFTONE; PHOTOGRAPHY.

ZIN'NIA, a genus of plants belonging to the family Compositae. There are sixteen species, native to Mexico and the Southwestern United States. Zinnias bloom freely all summer, and thrive best in a rich loam with sunny exposure. The garden zinnia, with single and double flowers of many shades of red and yellow, is the best-known species. The stem is stiff and hairy, and grows to a height of one to two feet. Each of the several branches is topped by a single flower head made up of many florets. When successfully cultivated, the zinnia is a showy plant with vivid scarlet, crimson, yellow and other hues. It does not always turn out well, however, as the colors sometimes are muddy. The flowers lack pleasing fragrance.

ZI'ON. See JERUSALEM.

ZI'ONIST MOVEMENT, or **ZI'ONISM**, a recent widespread movement among the Jews resulting chiefly from persecutions of them in various countries and having as its object the reëstablishment of a Jewish state in Palestine. Ever since Jerusalem was wrested from the Jews by Rome (see JERUSALEM), the Hebrew people have hoped to recover this land of their early fathers, and at various times Zionist agitations have been set on foot.

By far the most significant of these was started in the last years of the nineteenth century. Unlike earlier Zionist movements which sought primarily to gain possession of the Holy City, the idea behind this one was practical and political, as well as religious, and was an attempt to solve the

problem of persecuted Jews in many lands by finding a home for them where they might enjoy some form of self-government. This idea found expression in a pamphlet written in 1896 by Dr. Theodore Herzl, a Vienna journalist. Interest in the movement led to an international Zionist congress at Basel, Switzerland, in the following year.

The congress discussed means for obtaining governmental grants as a necessary preliminary to establishing settlements of Jews in Palestine. Subsequent congresses provided for the establishment of a national fund, and about $2,000,000 was collected from Jews throughout the world to promote the project. Negotiations were started with a view to making Palestine a tribute-paying state under the suzerainty of Turkey, and when the plan failed an attempt was made to secure a grant of territory from Great Britain in the vicinity of the Holy Land. This also was without fruition, and the offer by Great Britain in 1913, of the East Africa Protectorate as a site for a Jewish colony, was wrathfully rejected by the Jews, who refused to accept any nationalist plan which did not embrace the traditional idea of Palestine regained.

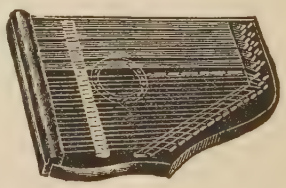
Within recent years the Zionist leaders have been chiefly interested in developing the physical resources of Palestine and in ameliorating the condition of Jews already there. This has resulted in the emigration of many Russian and Rumanian Jews to Palestine and the establishment of self-governing colonies there. The way has been opened to promote agriculture and the trades. Schools and banking systems have been established, and the Hebrew language has been revived. At the outbreak of the World War there were about forty colonies, each with a population ranging from a few families to 2,000 persons.

The outcome of the World War made the establishment of a Jewish state in Palestine a near possibility. In December, 1917, the British captured Jerusalem, and before the close of the war all Palestine had been freed from Turkish rule. In considering the reconstruction of Turkey it was generally agreed that Palestine should be an autonomous state, and the friends of Zionism enthusiastically united to carry out their long-cherished plans.

Early in 1918 a Zionist commission was sent from England to Palestine, the American Zionist organization providing most of the funds for its activities. A legion of Jewish young men from various countries was formed to aid the movement, all being volunteers. Membership and financial campaigns are being vigorously pushed. Judge Brandeis of the United States Supreme Court is a prominent Zionist, as is Nathan Straus, New York merchant and philanthropist. The latter has devoted years of his life to the upbuilding of Palestine, and it is his dream to end his days as mayor of Jerusalem.

ZIRCO'NIUM, a metallic element occurring either in the form of a black powder or as gray crystals. It was discovered in 1789 by Klaproth, in combination with silica, in the mineral known as zircon. Its use is very limited. The powder combined with oxygen forms the dioxide known as zirconia, used in making mantles of Welsbach lights and Nerst lamps.

ZITH'ER, a common, stringed musical instrument, especially popular in Germany and the Tyrol. About thirty gut and wirebound silk strings are arranged horizontally on a frame over a wooden sounding board. The instrument is placed on a table or on the knees. The strings are plucked by the fingers of the right hand and with the thumb the latter capped with a metallic plectrum.



ZITHER

ZO'DIAC, the zone or belt of the celestial sphere extending eight degrees on each side of the ecliptic, or plane of the sun's center containing the earth's orbit. It was divided by early astronomers into twelve sections of thirty degrees each, and the constellations within the respective sections came to be designated, for brevity's sake, by certain signs.

The twelve signs of the zodiac are Aries (♈), the Ram; Taurus (♉), the Bull; Gemini (♊), the Twins; Cancer (♋), the Crab; Leo (♌); the Lion; Virgo (♍), the Virgin; Libra (♎), the Balance; Scorpio (♏), the Scorpion; Sagittarius (♐), the Archer; Capricornus (♑), the Goat; Aquarius (♒), the Waterman; Pisces (♓), the Fishes.

ZODI'ACAL LIGHT, a nebulous light which appears in the west after sunset and

in the east before sunrise. It is triangular in shape, with base resting on the horizon and apex at varying heights. In the tropics it is visible the year round and is as distinct as the Milky Way. In middle latitudes it is seen in the winter and spring in the evening, and at dawn from September to spring. It is believed by some astronomers to be the reflection from a multitude of meteorites revolving about the sun.

ZOLA, *zo lah',* EMILE (1840–1902), a noted French author. He had published several novels and won considerable notice before beginning, in 1869, his great series in twenty volumes, recounting the complete story of an imaginary French family under the Second Empire. The entire work is known as *The Chronicle of the Rougon-Macquart Family.* These books, like so many of Zola's other works, deal largely with the dark side of life, with crime and vice, and picture vividly and accurately certain phases of Parisian Society. Some of the titles in the series are *The Fortune of Rougon, The Curée, The Conquest of Plassans, the Abbé Mouret, Eugène Rougon* and *His Excellency.* Of his later works the most important were the two series, *Lourdes, Rome, Paris,* and *Fruitfulness, Labor, Truth* and *Justice,* this last unfinished at his death.

EMILE ZOLA

Zola championed the cause of Captain Dreyfus, an officer in the French army unjustly accused of selling military secrets to Germany. He was forced to flee the country, but in 1899, after the acquittal of Dreyfus, he returned, and he died at Paris three years later.

ZOLLVEREIN, *tsole'fe rine,* a German word meaning *customs-union,* was a German commercial union formed under the leadership of Prussia, in 1818. At the beginning of the last century what is now Germany was made up of numerous small independent states, each with its own tariff regulations. This complicated system restricted commerce, and in 1818 an agreement was reached whereby internal customs were abolished. All import duties were collected on a common frontier, and the revenue thus received was divided among the several states according to population. Three unions were formed, the North German, the Middle German and the South German unions, and in 1834 these were merged in a single union, or Zollverein. In 1871, when the German Empire was formed, the constitution provided that the Zollverein was to include the entire empire, with the exception of the free cities of Bremen and Hamburg. Later these, too, with the exception of a part of Hamburg, were included.

ZONE, in geography, one of the five great divisions of the earth, bounded by imaginary circles, which are parallel to the equator. The zones are named according to the prevailing temperature in each. The torrid zone extends 23° 30′ north and 23° 30′ south of the equator, thus being 47° wide. It is bounded on the north by the Tropic of Cancer and on the south by the Tropic of Capricorn. The north temperate zone extends from the Tropic of Cancer to the Arctic Circle and is 43° wide. The south temperate zone extends from the Tropic of Capricorn to the Antarctic Circle and is of the same width as the north temperate zone. The north frigid zone extends from the Arctic Circle to the North Pole, and the south frigid zone from the Antarctic Circle to the South Pole. While the parallels named mark the arbitrary boundaries of these zones, the climate of each merges so gradually into that of the zones adjoining upon either side, that no distinct climatic boundary exists between them.

Related Articles. Consult the following titles for additional information:

Antarctic Circle	Equator
Arctic Circle	Geography
Climate	Tropics

ZOOLOGICAL, *zo o loj'i cal,* **GARDEN,** a park or other large enclosure where live animals are kept for exhibition. The Jardin des Plantes, in Paris, founded in 1804, was the first of such establishments, and the number has increased steadily, until at present many of the large cities in Europe and the United States maintain zoölogical collections of some sort. The gardens at London, Antwerp, Berlin, Vienna and Amsterdam are among the best in Europe. Most of the European collections are maintained by societies or corporations, the city merely furnishing the land. In the United States many cities have municipal "zoos," that at Bronx Park, New York City, being the largest and

finest in the world. The zoos of Lincoln Park, Chicago, and Highland Park, Pittsburgh, are also important, and Philadelphia, Cincinnati and Washington have well-equipped zoölogical gardens. The National Zoölogical Park at Washington is under the control of the Smithsonian Institution and is supported by the government.

At the Zoo

ZOOLOGY, *zo ol'o jy.* We are all interested in animals, and like to watch them and to learn about their habits; but it does not often occur to us that such an interest has any connection with a science with so forbidding a name as zoölogy. And indeed zoölogy is much more than a knowledge of the looks and the habits of animals; in its various branches it considers the form and structure of organisms, their activities and their relations to one another and to their surroundings.

To be sure, one may be happy and prosperous and fairly well equipped mentally if zoölogy be never studied, but certain facts relating to this science should be known by everyone. An elementary knowledge of the subject will save one from frequent embarrassment. For instance, if the statement be made that a whale and a man belong to the same class of animals, the uninformed person may be tempted to deny the fact. The household cat and the lion, king of beasts, are related, and only a little study is required to trace the relationship and to learn why scientists so classify them.

The fact of these relationships has not always been known even to scientists; indeed, it is only in comparatively recent times that exact classifications of animal life have been made. Far back in ancient times, Aristotle made studies of animal life, dissected specimens, and made a certain classification, and his work stood for the most part unquestioned until after the Middle Ages. Some of it is accepted to-day, modern scientific investigation having confirmed the theories of the old Greek scholar.

Plants and Animals. The word *biology* means *science of life,* and the science of biology treats of all forms of life, plant and animal. The fact that this one science of life is composed of two distinct sciences, one of which—botany—treats of plants, while the other—zoölogy—treats of animals, indicates that the two forms of life are distinct. Indeed, it seems to be a very simple matter to distinguish members of the plant world from animals. Usually it is easy; a bee on a flower, an ox grazing in a field of grass, a moth fluttering on a blossom are instantly classified. But there are among plants some with very simple organisms and among the lowest species of animals some whose organisms are not in the least complex; to tell which is plant and which is animal is difficult indeed. One may say that the animal is alive and can move, while the plant, though alive, has no power of motion. This is an error, as witness the sudden closing of the Venus's fly-trap (which see), when it entraps its food, the turning of some flowers so they will continually face the sun, and the twining of tendrils around sticks and strings. Most green plants live on inorganic matter—on carbon and carbonic acid gas—and this is what gives them their greenness. But some plants, the fungi, live on organic matter and are not green, and exist because they are able in a wonderful manner to change the organic matter they select for food into inorganic substance. When a plant substance is single-celled and has cell walls in many respects like those of single-celled animals, it is impossible for the wisest scientist to tell them apart.

What All Animals Need. A fish that has been taken from the water and left high and dry on the shore will not live long; a cat or a bird or a man will die in even shorter time if held under water. This does not mean, however, that a fish and a land animal breathe different substances—that one breathes water and the other breathes air. They both require the same substance, and cannot live without it; that substance is air. But a fish is so formed that it draws the air it needs from the water, which a land animal cannot do. No animal, from the lowest to the highest, can live without air, or rather without that element of air which is called oxygen.

Relationships. Earlier in this discussion brief reference was made to some of the odd relationships that exist in the animal world. This is one of the most interesting topics with which zoölogy deals. The word *cat* ordinarily

THE DOG FAMILY
1. Saint Bernard. 2. Fox terrier. 3. Fox. 4. Coyote. 5. Wolf.

means to us the little animal, gray or white or black, which plays about our homes; but after we have made the acquaintance of this science, the word *cat* gains a new meaning. It means the powerful lion, the lithe tiger, the graceful leopard, the sharp-eyed lynx—all wild, ferocious beasts that seem as different as possible from the household pet which we are used to thinking of as the most domestic of the animals. (See illustration, page 721).

The dog family is not so surprising. The wolf, the dog, the fox, the coyote look much alike, despite their numerous points of difference. If we can imagine ourselves as never having seen any of the animals before and then as being shown a wolf, a collie and a little black-and-tan, we will admit that we should be likely to assume that the wolf and the collie were more closely related than the collie and the little terrier. We have all watched cattle and sheep grazing in a field, but it has probably never occurred to any of us to think of them as belonging to the same family. And yet a study of the picture of the dog family, shown in this article, proves not only these animals belong to the ox family, but the goats, buffalo and the bison of our western plains as well.

The bobwhite is a plain little bird, dressed in quiet colors. Who would ever suspect for a moment that he belongs to the same family as the great bronze turkey or the gorgeous peacock? He may, however, claim such a relationship; and the guinea fowl, the partridge and our barnyard hens and roosters

are members of the same family, together with the bird which has given its name to the whole group—the pheasant.

Resemblance. Among the most interesting of the many wonderful facts about the animal world with which zoölogy acquaints us is what is known as resemblance or mimicry. We have perhaps looked, in a zoölogical garden, at the bears—the grizzly bear, the cinnamon bear, the polar bear; and we have known that the polar bear came from the arctic regions where snow covers the ground during most of the year, while the other bears come from more temperate regions—regions of forest and rock and mountain. But probably it never occurred to us that there was any particular reason for the differences in color.

Let us imagine, in the region of perpetual snow, a bear creeping upon his prey. He is a huge bear, and stands out with startling distinctness against the white ground. Would he ever be able to come close to his prey unobserved? But the polar bear harmonizes with his surroundings, and is almost unnoticeable against the white background. In the forest regions or mountain regions a white bear could be seen a long way off, while the darker-haired animals are much less conspicuous. The foxes and hares of the polar regions are pure white also, while a certain kind of weasel which lives in a region where snow covers the ground during only a part of the year changes from its summer coat of reddish brown to a winter coat of white. See Fur and Fur Trade.

There is one example of this changing of colors with which we are all familiar; that is in the little lizard which we call the chameleon. Its ability to make its color match that of its surroundings is commonly overestimated—it cannot change to any or every color; but it does grade through various shades of brown and green.

THE OX FAMILY

1. Cow. 2. Head of antelope. 3. Rocky Mountain Goat. 4. Sheep. 5. African buffalo. 6. Bison, or American buffalo.

Questions on Zoölogy

NOTE—For additional questions on animal life refer to *Nature Study*. In that department will also be found interesting outlines on animals, birds, fish, insects, etc.

What is zoölogy?

What is the derivation of the term zoölogy?

What does "cold-blooded" signify when applied to animals?

What are the difficulties of classification in the case of the lowest forms of animal life?

What are the causes of the migratory habit of animals?

Which are the more abundant, the higher or lower forms of life? Why?

What animal is born without a covering? Why?

What are the most useful animals to man for domestic purposes?

What animals are known as ruminants?

What parts of the deer are of commercial value?

How are flesh-eating animals equipped to eat their food? To obtain it? They are satisfied with one meal at a time, eaten rapidly; why?

Why does live stock have to graze so continuously?

What is the difference between an animal and a plant?

Name some of the many ways in which nature has provided for the safety and preservation of wild animals?

What animals produce the most expensive furs?

What do you mean by vertebrates?

In general, what one part of wild animals is of commercial value?

Name the domestic animals in what you think to be the order of their usefulness.

Perhaps the most wonderful of these resemblances are shown among the insects. There is the insect known as the walking-stick, which, with its long, slender wingless body and its dull color looks so like a dead twig that when at rest it cannot be distinguished from the twigs to which it attaches itself; there is the greenleaf insect, which has broad, leaf-green wings, which show the veins, the markings and even the discolorations of leaves; and most wonderful of all, there is the huge dead-leaf butterfly. The upper side of this remarkable butterfly's wings are dark, with orange and purple markings; but when it settles on a branch to rest it folds its wings close over its back, hides its head, and looks so exactly like a withered leaf that even close scrutiny cannot always distinguish it. The dead-leaf color is there, the short tail which looks exactly like a leaf stalk, the midrib, the veins, and even the two colorless spots which resemble holes eaten out by insects.

There is one other type of resemblance or mimicry. This is seen in the case of the harmless, non-poisonous insects which imitate exactly in their color and markings certain poisonous insects which really differ from them widely. By this mimicry the harmless insects are saved from the birds which would otherwise devour them.

Protective Coloration and Mimicry. When we use the words mimicry and resemblance, we must constantly bear in mind one fact: that is, that there is no consciousness, no intention on the part of the mimic. The insect or animal does not voluntarily imitate.

The Struggle for Existence. If all the animals that are born were to live, in a very short time the earth would be crowded to suffocation. For instance, it is stated that if all the eggs laid by the conger-eel were hatched, and every little eel grew and reproduced itself, it would take less than ten years for the sea to become solidly full of conger-eels. It is clear that only a small proportion of the animals born survive. So fierce, indeed, is the struggle, that it is usually only by means of superior strength, cunning or agility or by means of some special protective device, such as the mimicry spoken of in the last paragraph or poisonous secretions, that animals can live and thrive. First there is the struggle within the species—fox fights against fox, and the stronger wins. Then there is the struggle with animals of other species, and finally with the conditions of life, or forces of nature. If in any given locality, only enough food exists for a certain number of animals, all above that number must starve or migrate. Innumerable birds, insects, fish, animals of all species die of starvation; many die from climatic condi-

THE PHEASANT FAMILY

1. Peacock. 2. Turkey. 3. Domestic hen and rooster. 4. Partridge. 5. Guinea fowl. 6. Bob white. 7. Golden pheasant.

tions; in settled parts of the country many are killed by man. By all of these means the animal population of the world is kept down. In most districts which are uninhabited, the number of a certain species of animals remains nearly constant; where man joins his destructive forces with those of Nature, the forms of wild life diminish rapidly.

Related Articles. Consult the following titles for additional information:

Amphibians (with list)
Animal
Animal Intelligence
Arachnida
Arthropoda
Birds (with list)
Carnivora
Cell
Cephalopoda (with list)
Cetacea (with list)
Chiroptera
Coelenterata
Crustacea (with list)
Cuvier, George L.
Darwin, Charles
Echinoderms
Edentata (with list)
Egg
Evolution
Feathers
Fish and Fisheries (with list)
Hemiptera
Hibernation
Horn
Infusoria
Insectivora
Insects (with list)
Invertebrates
Lamarck, Jean Baptiste
Linné, or Linnaeus
Larva
Mammals (with list)
Marsupials (with list)
Metamorphosis
Mollusca (with list)
Molting
Myriapoda
Neuroptera
Orthoptera
Primates (with list)
Protective Coloration and Mimicry
Protoplasm
Protozoa
Radiolaria
Reptiles (with list)
Rodents
Ruminants
Scales
Ungulates
Vertebrata
Vorticella
Worms
Zoölogical Garden

Outline on Zoölogy. The following outline contains the classification of animals generally accepted by the leading authorities during the past half century, or thereabouts. It has divided the animal kingdom into seven subkingdoms; each of these is divided into families; the families are divided into genera and the genera into species. The subkingdoms are distinguished by bold-faced type and Roman numerals.

I. **Protozoa** (first animals)
   (1) Monera (single + substance)
   (2) Rhizopoda (from two Greek words meaning "root" and "foot")
   (3) Foraminifera (having an opening or orifice)
   (4) Radiolaria (so called because of the spiny projections which radiate from the center of the body)
   (5) Infusoria (so called because found in infusions after even brief exposure to air)

II. **Coelenterata** (hollow intestines)
   (1) Medusae (so called because of the fringe supposed to resemble Medusa's locks)
   (2) Polyp (polypus meaning many-footed)
      (a) Sponge
      (b) Coral
      (c) Sea anemone

III. **Worms**
- (1) Platyhelminthes (flat + worm)
  - (a) Flat-worm
  - (b) Tape-worm
  - (c) Fluke-worm
- (2) Nematelminthes (thread + worm)
- (3) Star-worms
- (4) Annulata (so called because of the ringed markings)
  - (a) Leech
  - (b) Earth-worm
  - (c) Sea-worm

IV. **Echinodermata** (spring skinned)
- (1) Crinoidea (lily + like)
- (2) Star-fish
- (3) Sea urchin
- (4) Sea cucumber

V. **Mollusca** (soft body-red animals)
- (1) Bivalves
  - (a) Oyster
  - (b) Clam
  - (c) Mussel
  - (d) Scallop
- (2) Cephalophora (head + to bear)
  - (a) Whelk
  - (b) Snail
- (3) Cephalopoda (head + feet)
  - (a) Squid
  - (b) Cuttle-fish
  - (c) Nautilus
  - (d) Octopus

VI. **Arthropoda** (jointed-foot animals)
- (1) Crustacea
  - (a) Water-flea
  - (b) Shrimp
  - (c) Lobster
  - (d) Crab
  - (e) Barnacle
- (2) Myriopoda (numberless feet)
  - (a) Millipede (thousand feet)
  - (b) Centipede (hundred feet)
- (3) Arachnida (from the Greek word for spider)
  - (a) Spider
  - (b) Scorpion
  - (c) Mite
  - (d) Tick
- (4) Insects
  - (a) Thysanura (fringe tail)
  - (b) Dermaptera (skin + wings)
  - (c) Orthoptera (straight wings)
    - (1) Grasshopper
    - (2) Locust
    - (3) Cricket
    - (4) Katydid
    - (5) Cockroach
  - (d) Platyptera (flat + wing)
    - (1) White ant
    - (2) Bird-lice
    - (3) Bookworm
  - (e) Hemiptera or bugs half or semi + wing)
    - (1) Louse
    - (2) Squash bug
    - (3) Chinch bug
    - (4) Locust
    - (5) Cochineal (from the Latin word for scarlet)
  - (f) Neuroptera and allied groups (nerve + wing)
    - (1) Dragon fly
    - (2) May fly
    - (3) Scorpion fly
    - (4) Caddis fly
  - (g) Beetles
  - (h) Fleas
  - (i) Diptera (two wings)
    - (1) Fly
    - (2) Mosquito
  - (j) Lepidoptera (scaly wings)
    - (1) Butterfly
    - (2) Moth
  - (k) Hymenoptera (membrane + wing)
    - (1) Bees
    - (2) Wasps
    - (3) Ants
    - (4) Gall-flies

VII. **Vertebrata** (animals having vertebrae or backbone)
- (1) Fishes
- (2) Amphibians (from the Greek word meaning "double life")
  - (a) Salamander
  - (b) Frog
  - (c) Toad
  - (d) Blindworm
- (3) Reptiles
  - (a) Lizards
  - (b) Snakes
  - (c) Turtles
  - (d) Crocodiles
- (4) Birds
  - (See detailed outline, page 455)
- (5) Mammals
  - (a) Duck-billed platypus
  - (b) Marsupialia (having a pouch)
    - (1) Opossum
    - (2) Kangaroo
  - (c) Edentata ("without teeth," but the term is misleading, as most of them have teeth)
    - (1) Sloth
    - (2) Ant-eater
    - (3) Armadillo
  - (d) Rodentia (gnawing)
    - (1) Rat
    - (2) Mouse
    - (3) Squirrel
    - (4) Porcupine
    - (5) Beaver
    - (6) Hare
  - (e) Insectivora (insect + to devour)
    - (1) Mole
    - (2) Shrew
  - (f) Chiroptera or bats (from words meaning hand and wing)
  - (g) Cetacea (from the Latin word for whale)
    - (1) Whale
    - (2) Porpoise
  - (h) Sirenia (i. e., sirens)
    - (1) Manatee
    - (2) Dugong (Malay word)
  - (i) Proboscidia or Elephants (before + to feed or graze)
  - (j) Ungulata (from ungula, a hoof)
    - (1) Odd number of toes
      - (a) Horse, ass, zebra
      - (b) Rhinoceros

ZOOLOGY

ANIMALS

Prōtōzōa —One-celled animals.

No definite shape; jelly-like substance; root-like projections of body for feet, with which they seize their prey and absorb it.

Coelĕnterăta—Many-celled.

a. Simple organisms. Capture food by long tentacles. No distinct circulatory system or body cavity. Two types: Those bell-shaped and cylindrical.

b. Examples: Sponge, anemone, coral, hydra, etc.

Echĭnodermata. Sometimes called radiates.

a. Consists of five parts around a center. Covering sometimes a hard shell; others soft and leathery. Alimentary canal separate from body cavity.

b. 3,000 living species found in all seas—such as starfish, sea-urchin, etc.

Vĕrmēs—Worms.

a. Made up of joints or segments, head, tail, upper and lower surfaces, heart, nerves, etc.

b. Many species, but all have same characteristics.

Mollŭsca. Sometimes called shellfish.

a. Possess alimentary canal, distinct nervous system, digestive apparatus, mouth, gullet, stomach, intestines.

b. Examples: Oyster, clam, cuttlefish, etc.

Ärthrŏpoda. Sometimes called articulates.

a. Possess well- organized nervous systems; usually have simple or compound eyes. Some species are parasites.

b. Examples: Insects, spiders, lobster, crab, etc.

Vertebrates.

a. Possess backbone. Two cavities: Upper containing brain; lower, heart, digestive organs, etc.

b. Examples: Mammals, reptiles, fishes, birds, amphibians, etc.

General Facts

1. One-celled animals bear strong resemblance to lowest orders of plant life.
2. This simple cell has the power to do all things necessary for its life.
3. Higher formed animals have many cells, and whole sets of organs. These vary in different animals but their function is the same.
4. Animals require oxygen, while plants require carbonic acid.
5. Animal intelligence. Many animals possess the senses of man—touch, sight, etc. Higher animals possess memory. Animals draw inferences from what they see, but it is doubtful whether an animal can put together different facts and establish a conclusion.

SUGGESTED FOR BLACKBOARD OUTLINE

(2) Even number of toes
(a) Tapir
(b) Peccary
(c) Pig
(d) Hippopotamus
(e) Deer
(f) Sheep
(g) Ox and bison
(h) Camel
(k) Carnivora (flesh + to devour)
(1) Aquatic
(a) Walrus
(b) Seal
(c) Sea lion
(2) Land
(a) Bear and racoon
(b) Mustelidae (from mustela, the Latin word for weasel)
(1) Otter
(2) Skunk
(3) Weasel
(4) Badger
(5) Mink
(c) Dog family
(1) Fox
(2) Wolf
(3) Dog
(d) Cat family
(1) Hyena
(2) Lynx
(3) Panther
(4) Leopard
(5) Tiger
(6) Lion
(l) Primates (from the Latin primus, meaning first or highest)
(1) Lemur
(2) Marmoset
(3) Monkey
(4) Ape
(5) Man

ZORN, *tsorn,* ANDERS LEONHARD (1860–), a Swedish artist, famed as a landscape and portrait painter, etcher and sculptor. He was born at Mora, of peasant parents. Zorn expected at first to devote himself wholly to sculpture, and to that end studied in Stockholm for six years; subsequently he took up etching and water color painting in London. His first oil painting, *Fisherman from Saint Ives;* was purchased for the Luxembourg Museum in 1888. Zorn's fame steadily increased with time, as he showed genius in all phases of art which he undertook. He became a foremost portraitist, showed a mastery of the technique of sculpture, and won equal fame as an etcher. His portraits include *King Charles of Sweden,* a study of himself (in the Uffizi), *Maja* and *The Toast.* Among his etchings is a remarkable series of portraits, including studies of Renan, Strindberg, France, Rodin and other celebrities. Notable pieces of sculpture include a statue of Gustavus Vasa, *Faun and Nymph* and *Grandmother.*

ZOROASTER, *zo ro as'ter,* a teacher and reformer of ancient Persia, who formulated one of the chief religious systems of the world. It is not definitely known when he lived, but it was probably between 660 and 583 B. C. Legend associates with his life such supernormal phenomena as miracles, symbolic dreams, visions and temptations by an evil spirit. His teachings are embodied in the Zend-Avesta, the sacred book of the Parsis and Guebers, his followers at the present time. They embrace the idea of conflicting forces of good and evil in the world, and man's power to choose between them. Good thoughts, good words and good deeds form the watchword of the faith.

ZOUAVES, *zwahvz,* or *zoo ahvz',* originally a body of troops in the French army. It derived its name from a tribe of Kabyles inhabiting the mountain of Jurjura, in the Algerian province of Constantine. General Clausel, of the French army in Algiers, created, in 1830, two battalions of Zouaves, in which each company consisted of French and Zouaves in certain proportions, officers, subalterns and soldiers being selected from both. The zouaves, though retaining their Moorish dress, were armed and disciplined after the European fashion, and the battalions were recruited by voluntary enlistment.

The mixing of soldiers proved unsatisfactory, and after 1839 no more natives were recruited, though regiments of Algerian sharpshooters were formed of men of exceptional physique and courage. These regiments became an integral part of the French army, and won distinction not only in Africa, but also in the Crimea, Italy, Mexico, Tunis and Tongking. The Zouaves now in the French army are organized in three regiments of five battalions each, and are among the finest soldiers in Europe. A large force of these *Turcos,* as they are called, fought in the great war from 1914 to 1918.

In the United States during the Civil War some Northern regiments adopted the Zouave uniforms and were known as Zouaves. Most famous of these was a New York regiment, under the command of Colonel Ellsworth.

ZUIDER ZEE, *zi'der ze',* a large, shallow arm of the North Sea, extending into the northwestern part of the Netherlands. The

reclamation of the land under the Zuider Zee and its transformation into a fertile province is one of the immediate projects of the Netherlands (see NETHERLANDS, pages 2512-'13). The inlet consists of an oval inner portion, a horn-shaped outer portion and a narrow strait connecting the two. The area is about 2,000 square miles. Originally the inner portion was a lake, situated in a region of fens and marshes. In the thirteenth century severe storms caused an inundation of the North Sea and the submergence of large sections of land.

ZULUS, *zoo'looz*, a warlike people of Bantu stock, inhabiting parts of South Africa. They support themselves chiefly by raising millet and breeding cattle. They live in thatched and plastered houses, supported by poles, which are beehive in form and arranged in large circles, enclosing the cattle pens. These communities, or villages, are called *kraals*. Pottery making, basket weaving, iron smelting and hide tanning are engaged in to a certain extent. The principal weapons are the assegai and the knobkirri. Polygamy and wife purchase are customary. Chaka, the chief ruler during the first quarter of the nineteenth century, dominated South Africa from the Zambezi to Cape Colony. Cetewayo reigned from 1874 to 1878, and by his depredations he embroiled his people in war with England. Dinizulu, his son, was crushed in 1879, but, as he continued to incite the natives to fighting, he was banished. The Zulus are gradually becoming civilized.

Zululand, *zoo'loo land*, a region of Southeastern Africa, forming a part of the British province of Natal, to which it was annexed in 1897. Its area is about 10,450 square miles, and its population is about 230,000, the most of whom are natives. See NATAL.

ZUNI, *zoo'nyee*, the popular name of a Pueblo Indian tribe which inhabits four pueblos, or villages, in New Mexico. The most important of these villages is also called Zuñi. The Zuñi, or Ashiwi, as they call themselves, have lived in the same locality for centuries; the Spanish explorers discovered them there in 1539, and missions were established later among them.

Zuñi is built about a central court, surrounded by a continuous high wall which is scaled by ladders on both sides, intended originally for defense. The entrances to the houses are on the roofs; and these also are reached by ladders inside and out. The people number about 1,600. They support themselves by cultivating the soil and raising stock.

ZURICH, *zoo'riK*, SWITZERLAND, capital of the canton of Zurich and the largest city of the republic. It is on the Limmat, at the northern end of Lake Zurich, sixty miles northeast of Bern. The city is divided by the Limmat into two parts, known respectively as the Little City and the Great City. The old historical quarter of Zurich is picturesque, with its steep, narrow streets and quaint, dark houses, but the newer part of the city has handsome buildings and wide, attractive streets. Among the more noteworthy buildings are the old Wasserkirche, which now houses the municipal library; the old church known as the Grossmünster, of which Zwingli was pastor; the townhall, the university buildings and the Swiss national museum, the largest museum in Switzerland.

The educational institutions of the town include the university, with about 800 students, and the Federal Polytechnic, which has about 1,100 regular students, besides special students who attend lectures. Commercially and industrially, Zurich is of considerable importance. The silk industry is large, and cotton, paper and machinery are also manufactured. During the Middle Ages the town of Zurich was prosperous and important. It was the scene of the beginning of Zwingli's reformation. Population, 1910, 189,088; in 1918, estimated, 213,900.

ZURICH, LAKE, a lake of Switzerland, lying mostly within the canton of Zurich, but extending for a short distance into Schwyz and Saint Gall. It is about twenty-five miles in length and from one-half to two and one-half miles in width, and is somewhat in the shape of a crescent. Its scenery is picturesque and charming, although not so imposing as that of some of the other lakes of Switzerland.

ZUYDER ZEE, *zi'der ze'*. See ZUIDER ZEE.

ZWINGLI, *tsving'lee*, ULRIC or HULDREICH (1484–1531), an illustrious Swiss reformer. In 1506 he was ordained by the bishop of Constance, becoming in the same year pastor of the large parish of Glarus. His studies in the New Testament gradually led him to question many of the doctrines in which he had been trained, and by degrees he became known as an ardent reformer, as well as a

prominent patriot. He had no communication with Luther, but by 1516 he had begun a work in Switzerland very similar to that which had been started by the great German reformer. In 1522 he demanded of the bishop of Constance and all the governments of the confederation the abolition of the law imposing celibacy upon the priests, and his suggestions for one reform after another widened his breach with the Church.

In 1529 he went to Marburg, to confer with Luther and the other German reformers, upon the possibility of uniting the reform movements, that a stronger resistance might be made to their opponents. Zwingli was willing to make concessions, but Luther objected to the fact that the religious movement in Switzerland was allied with a movement for civil reform, and this, together with their differing views on the Lord's Supper, prevented coöperation. In 1531, when open war broke out between the Catholic and the Protestant cantons of Switzerland, Zwingli accompanied the Zurich regiment as chaplain and was killed at the Battle of Kappel.

COMPLETE INDEX

In the pages which follow there is printed a carefully compiled Index of all topics which are treated in this set of books.

In the minds of many people information regarding various phases of knowledge is contained only in special articles bearing black-face capital-letter headings. The general plan of THE EDUCATOR volumes provides the usual and familiar alphabetical arrangement of such titles. Every article bears such a heading, but there is a vast array of facts which, while of value, are not of themselves of sufficient moment to demand treatment in separate articles. Such bits of information are found in the body of discussions of thousands of related subjects, but they are not accessible on a moment's notice. There is needed, therefore, a system of reference which will disclose their positions in the volumes.

The present Index presents these very numerous subjects by page numbers, and points to the column where information regarding them will be found. The letter *a* after a number indicates the location of a fact in the first column of the page; the letter *b* locates it in the second column.

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